

Alcohol Related Problems

A Manual for Medical Officers



De-addiction Centre

National Institute of Mental Health and Neurosciences

Bangalore

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ALCOHOL RELATED PROBLEMS

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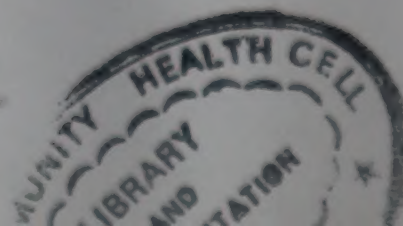
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FOREWORD

It gives me great pleasure to have the opportunity of writing a foreword to Alcohol Related Problems : a Manual for Medical Officers. This book fulfils multiple areas of crucial need and I hope it will serve as a template for the development of similar projects in other countries.

Alcohol use and associated problems create difficulties for the people in most nations of the world. A huge proportion of the national budgets is impacted by alcohol related accidents, missed time from work, family problems, and impaired health. The latter includes the indirect impact alcohol use has on pre-existing medical and psychiatric disorders, as well as more direct consequences of heavy drinking from heart disease, strokes, cancer and host of other life-threatening conditions.

Despite these problems, most health care providers receive little training in the recognition and treatment of alcohol-related pathology. The demands of clinical practice make it difficult for many to improve their knowledge on this important topic.

Therefore, there is a need for a pragmatic, clearly written manual such as this. To be optimally useful, the book should apply the general knowledge regarding alcohol in the cultural context in which this material can be most easily translated into daily clinical practice. That is exactly what the authors of this fine text have done.

I am happy to recommend this as essential reading for medical officers and members of allied health care professions in India. I hope teachers in other countries develop similarly culturally-relevant manuals.

Marc Schuckit
Professor of Psychiatry
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San Diego Veterans Hospital

PREFACE

Alcohol has been discovered and used by practically every culture in the world. This practice has invariably produced problems of alcohol misuse.

Although India has traditionally been thought of as a 'dry' culture, there is enough evidence of the use of alcohol and intoxicants in several parts of the country for centuries. However, much of this use was under social and cultural controls, limiting problems due to such use. With disappearing societal controls and with increasing use of alcohol, problems related to alcohol misuse are on the rise. It would indeed be appropriate to say that alcohol misuse poses one of the most daunting challenges to public health. Accidents, infections such as tuberculosis and HIV, seizures, cerebrovascular problems and suicides have a significant association with alcohol misuse.

Intervention in alcoholism has focused on two areas. One is on the progression of alcohol use to problem use and addiction (dependence). Traditionally, help has been available to patients only after the development of such dependence. Treatment at this stage is often expensive, unsuccessful and prone to relapses. Such treatment failures invariably reinforce the negative attitudes and therapeutic nihilism towards drinkers.

The other more recent focus has been on moderate drinking and its consequences. It has been clearly established that the major burden due to alcohol use comes from moderate drinkers. Unfortunately, while this is especially true in the Indian context, this group has rarely been addressed either in terms of policy or intervention.

While only about 10% of heavy drinkers reach addiction specialists, 90% of heavy drinkers present to the general practitioner with various physical problems, aggravated or caused by drinking. Timely intervention at this stage is often very effective and helps to halt the progression of drink related problems.

Realising the importance of the primary care physician in the management of alcohol related problems, the De-Addiction Centre, NIMHANS, has brought out this manual on Alcohol related problems. The authors have drawn both from their clinical experience as well as from various other sources of information. The manual is designed to provide information of alcohol sequelae, help the primary physician in a thorough assessment of alcohol and related physical problems, advise patients on risks of alcohol use and provide a set of simple steps to the physician to help the patient with alcohol related problems.

Dr. M Gourie-Devi
Director and Vice-Chancellor

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- ❖ The various sources of information which have helped us prepare this manual. Chief among these is the Manual for Physicians from the National Institute of Alcoholism and Alcohol Abuse, U.S.A.
- ❖ The staff of the De-Addiction Centre of NIMHANS
- ❖ Our patients who have contributed to our learning and experience and raised our concern for those who have no help available for their drinking problems. We hope this manual will help physicians to reach out to all of them.

The Authors

Authors' Note

Alcohol and drugs not only cause serious problems by themselves, but can also worsen other medical conditions for which patients may seek help.

Primary care physicians can be involved with prevention of alcohol and drug related problems at any of the following three levels:

1. ***Minimally***, by learning to:

- recognize dysfunction caused by alcohol abuse through proper history taking and screening for alcohol and drug use
- identifying medical complications or symptoms that suggest underlying alcohol or drug abuse
- making a referral for appropriate medical care

2. ***To a limited extent***, by:

- assisting patients in detoxification as a preparation for more extensive treatment
- educating patients about the disease
- formulating a plan for recovery; involving family or others, as appropriate, in the recovery plan
- continuing medical management even after the initial treatment phase

3. ***Comprehensively***, after acquiring specialized knowledge, training, and experience by:

- being available to patients for an indefinite period of recovery
- providing a nonjudgmental and supportive relationship
- providing medical care and any necessary pharmacotherapy
- referring the patient to appropriate health, social, vocational, and self help support systems
- continually monitoring, treating, or referring any complicating illness or relapse

This manual addresses the major problems associated with alcohol abuse and suitable interventions. The main focus has been on presentations that the primary care physician would encounter in day to day practice. The manual lays emphasis on two important issues: the detection and management of early problems related to alcohol use as well as the ways alcohol can complicate existing medical problems.

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1. Introduction

Introduction

Why primary care physicians need to know about alcohol related problems

Alcohol related diseases affect about 10% of the world's population each year (World Development Report, 1993). Such problems present in many different ways to practitioners of almost every branch of medicine. Long before the patient with established alcohol dependence comes to the attention of the specialist in addiction medicine, he / she is very likely to have sought help for various medical and surgical problems.

Problem drinkers have more frequent health visits at hospitals and clinics due to alcohol related physical illnesses

- 23.3% of in-patients [40% of all males; 7% of all females] in a large Bangalore general hospital had associated drinking problems. However, only 20% of all the problem drinkers were detected by the attending physicians.
- In a survey in the rural sector, among patients admitted to a district general hospital in Karnataka, 54% of the male patients and 16% of the female patients were alcohol users. 52% of the male users had problem drinking.
- Among the patients attending the general practitioners' clinics at a taluka headquarters, 50% of the male patients were using alcohol and 54% of these users had problem drinking.

However, alcohol related problems often go unrecognized.

- In spite of high prevalence rates of alcohol problems in their patients only 1.4% to 2.3% of such patients were asked about alcohol use by their doctors and none of them were advised to stop alcohol use. Although a large proportion of the patients were consulting for what appeared to be clearly alcohol related problems, the medical professionals did not pick these up. The patients were treated symptomatically without attending to the root cause. This sets up a revolving door pattern of repeated admissions and discharges, which exert a heavy toll on the state's resources.
- Patients with medical problems arising from harmful alcohol use continue to visit multiple primary care physicians and avail of hospital facilities for an average of 11 years before they seek treatment for the advanced condition of alcohol dependence at a deaddiction facility. By this time the condition is more refractory to treatment, the patient has developed considerably more serious medical problems, and has contributed to considerable economic and industrial loss to the state, as well as severe and often irreparable harm to the family.

Heavy drinkers [people who drink heavily but do not yet qualify as being alcohol dependent] account for even more medical, social and economic problems than the chronic "alcoholics".

- In a study of the causes of suicide in Bangalore in 1999, it was observed that out of 2600 completed suicides, 14% of all males who completed suicide and 1% females, had heavy alcohol use as a likely trigger or predisposing condition. 24% of all attempted suicides were similarly alcohol related.
- A pilot study assessing causes of death in the community in Bangalore found that 9 out of 30 deaths [30%] had heavy alcohol use as a direct or indirect cause.
- Similarly, heavy use of alcohol was associated with 30% of all strokes listed in the Stroke Registry at NIMHANS.

Reasons for under recognition of alcohol related problems

- Lack of education about alcohol abuse: only a very small portion of the undergraduate medical syllabus is devoted to this area, and limited only to the medical complications of alcoholism
- Negative attitudes about alcoholism: physicians in training often see late stage alcoholics, who often evoke feelings of aversion, hostility and helplessness. Some physicians tend to see alcoholics as bad or morally weak.

- Pessimism about treatment: there are many physicians who feel that alcoholism is not treatable. Part of the helplessness and pessimism occurs because of the experience with late stage problem drinkers where the treatment is not always successful. The physician must remember that early detection and intervention of alcohol related problems offers the best results.
- Discomfort with related social issues: since alcoholism involves not just medical issues, but significant psychosocial issues many physicians are uncomfortable dealing with it.
- Many physicians themselves use alcohol, and this creates in them a moral dilemma about counseling patients regarding alcohol use

Rationale for Early Intervention

Treatment for alcohol dependence is usually easier in early stages of the disorder. The focus therefore needs to shift towards interventions aimed at the early stage problem drinker. This is more promising in the long term and is also cost effective. The early stage problem drinker is most likely to present to the general hospital or the primary care physician. The patient may present with any of a variety of disorders associated with alcohol abuse but may not often give a history of alcohol use. The physician who is not aware may be likely to treat only the secondary disorder without attending to the alcohol problem which is likely to be the cause or perhaps a complicating factor.

Preventive efforts on the part of primary care physicians are important because:

- (1) alcohol-related problems are common in patients who visit them;
- (2) heavy alcohol use contributes to many serious health and social problems; and
- (3) physicians can successfully influence drinking behaviors.

For effective intervention to occur, medical practitioners, both general and specialist need be competent in:

- 1] Screening patients for alcohol use
- 2] Assessment for problems related to alcohol use
- 3] Treatment
- 4] Referral to specialized services.

The most effective tool for screening is a thorough history of the patient's drinking behavior designed to identify patterns of alcohol-related difficulties with physical and mental health, family life, legal authorities and employment. The severity of the alcohol problem and the patient's readiness to change should determine the intervention selected by the family physician.

Several studies of early and brief physician interventions have demonstrated a reduction in alcohol consumption and improvement in alcohol-related problems among patients with drinking problems. A 40% reduction in drinking in nondependent problem drinkers has been demonstrated following physician advice to reduce drinking.

Brief Intervention for alcohol related problems : an Introduction

In a brief intervention the clinician:

- 1] **screens for harmful use of alcohol in the patient**
- 2] **provides links between patient's drinking and associated problems and advice about changing**
- 3] **assesses the patient's readiness to change**
- 4] **negotiates goals and strategies for change**
- 5] **plans follow-up monitoring.**

- Early identification of alcohol related problems is important because these problems are widely prevalent, pose serious health risks to patients and their families, and can be handled by appropriate intervention
- Physicians may be able to help patients change their drinking behaviours without formal treatment after personal reflection about negative consequences.

Brief intervention involves clinician-patient contact of 10 to 15 minutes - the typical duration of a routine follow-up, and a limited number of sessions. At least one follow-up visit is recommended, but the number and frequency of sessions depends on the severity of the problem and the individual patient's response.

Goal of Brief Intervention

The broad goal of brief intervention is to get patients to reduce or stop alcohol or other drug consumption and thereby avoid or minimize associated problems. The specific goal varies depending on the patient's current status and previous treatment attempts. For a patient who does not realize there is a problem, the goal may be to get the individual to start thinking about the issue and come back for another visit.

A brief intervention could be for:

- The alcohol or drug user who has not yet experienced harmful consequences but is at risk for problem development because of a hazardous consumption pattern (e.g., the college student or factory worker who is drinking heavily).
- Patients who recognize that some of their health or other problems are alcohol- or drug-related, and who are ready for and capable of change. The goal will be to reduce or eliminate substance use through specified steps.
- Patients with more severe problems. If initial attempts to change do not succeed, the goal of brief intervention is to convince a patient to accept a referral for more specialized assessment and treatment services.

To be able to carry out an effective brief intervention for alcohol related problems, the physician must be aware of the wide spectrum of problems related to alcohol abuse, the effects of alcohol on different systems, its interaction with prescribed drugs, the different stages of alcoholism and their recognition.

Summary

1. Primary physicians must know about alcohol related problems because:

- As estimated 20-40% of patients seeking treatment at general hospitals have related alcohol problems.
- Physicians encounter patients with early alcohol related problems at least 10 to 11 years before such patients present to specialised addiction treatment services

2. Alcohol problems go undetected or untreated because:

- Traditional training has taught us to recognise only end-stage problems like cirrhosis and not early problems, where intervention is more effective
- Many treating physicians have a negative, moralistic attitude towards drinkers
- There is pessimism about drinking treatment outcome which comes largely from the experience with end stage drinkers
- Psychosocial issues which may complicate alcohol problems are totally neglected

3. Brief interventions can help physicians to:

- Screen for harmful patterns of alcohol use
- Provide links between the patient's drinking and associated problems
- Negotiate patient's drinking goal choice and advise strategies for change

2. Alcohol Consumption

The continuum of risk

Alcohol Consumption

Alcoholic Beverages

India is the second largest producer of spirits in the world. The major beverage alcohol produced and consumed are:

1. The so called Indian Made Foreign Liquors (IML) - Whisky, Brandy, Rum, Vodka, Gin etc. manufactured in India. Except for the costly premium brands, most of the IML varieties consist of mixtures of Rectified Spirit and Water, mixed up to constitute 42.8% volume by volume (v/v), to which is added artificial colouring and flavours.
2. Arrack - So called Country Liquor, manufactured in Government licensed factories. This is usually just a mixture of Rectified Spirit and Water, mixed up to constitute approximately 35% v/v. In Karnataka these are sold in 100 ml. plastic sachets.
3. Beer - which is manufactured in two varieties, a standard type containing around 4% v/v of alcohol and a strong or fortified variety with alcohol content between 5 - 15% v/v.
4. Wines are manufactured locally but do not match the consumption of the spirits and the beers.
5. Local brews like toddy, which is the fermented extract from the palm tree are popular in certain parts of the state.
6. In addition to the licit and licensed beverages, there are considerable amounts of illicitly brewed and distilled alcoholic beverages which are consumed largely because they are cheap and easily affordable. However, since the production of these beverages is illicit and unmonitored these are often adulterated. Methanol is one of the most dangerous adulterants and is often the cause of acute and life threatening medical problems. Such "hooch tragedies" are commonly encountered.

Effects of alcohol

Alcohol produces its intoxicating / depressant action by interfering with the normal functions of the brain. The acute effects of alcohol are determined by the concentration of alcohol in the blood [Blood Alcohol Concentration - BAC]. The larger the concentration of absolute alcohol in the beverage drunk, the higher is the peak BAC.

The BAC reaches its peak within 30 to 60 minutes after consuming alcohol on an empty stomach. BAC rises slowly if the drink is sipped and rapidly if it is gulped down.

Carbonated drinks, like soda, mixed with alcohol, increase the rate of absorption. Food in the stomach prior to drinking, especially carbohydrates and fats, delays the absorption and the peak BAC.

Beverage Strength

Distilled spirits like whisky, rum, brandy and gin contain 42.8 % volume / volume (v/v) of absolute alcohol or 42.8ml of absolute alcohol in 100 ml of the drink.

Arrack contains around 35 % v/v and normal beers contain less than 5 % v/v.

Standard Drinks

Quantity of drinking is best expressed in terms of standard drinks. Each standard drink is equal to about 10 grams of ethanol

One standard drink (One Unit) is :

- * 30 ml of spirits (whisky, rum, brandy, gin etc.)
- * 60 ml of wine or
- * one mug OR $\frac{1}{2}$ bottle of beer
- * $\frac{1}{3}$ of a sachet [100 ml] of arrack

Effects of alcohol

Blood alcohol concentration (mg/dL)	Behavioural Effects
Less than 80	Euphoria, feelings of relaxation, talking freely, clumsy movement of legs and hands, reduced alertness, increased self - confidence
More than 80	Noisy, moody, impaired judgement, driving ability
100 to 200	Blurred vision, unsteady gait, gross motor incoordination, slurred speech, aggressive, quarrelsome, talking loudly
200 to 300	Amnesia for the experience
300 to 350	Coma
350 to 600	Death

Women become more intoxicated than men at an equivalent dose of alcohol. This is due to significantly reduced activity of alcohol metabolizing enzymes in women compared to men. Women also have proportionately more fat and less body water. Because alcohol is more soluble in water than in fat, a given dose becomes more highly concentrated in a female's fluid compartment than in a male's.

On average, one standard drink (see table) (one standard drink is 30 ml of distilled spirits and equivalent to 10 gm of absolute alcohol) drunk by a man weighing 70Kg, is likely to raise his BAC to around 15 to 20 mg / dL (0.15 to 0.29/dL). Consumed over a period of about an hour, 60 ml and 90 ml of whisky are likely to produce BAC's of 50 mg/dL and 80 mg / dL respectively.

It takes approximately one hour for one unit of alcohol to be completely metabolized by the body. Most of this process occurs in the liver. So, a person drinking a "quarter" of spirits [180 ml] is likely to take more than 6 hours before his brain is completely free of the effects of alcohol. Also, since the metabolism in the liver generally follows zero order kinetics, the rate of breakdown of alcohol is relatively constant. This means that the traditional remedies of giving coffee, cold showers or making a person walk around to work off the alcohol and become sober are actually quite useless.

Alcohol is a depressant of the central nervous system. In relatively smaller amounts it sedates and relieves anxiety. While higher doses it depresses the inhibitory centers in the brain, causing disinhibition which may be manifested in talkativeness, boisterousness and exaggerated feelings of well – being. With increasing CNS disinhibition, people become aggressive, morose and emotional. At even higher doses there is increasing sedation and finally unconsciousness, coma and even death.

Small amounts of alcohol are excreted by the lung. Since the alcohol in the alveolar air is in equilibrium with that in the blood in the lungs, the concentration of alcohol in the breath [Breath Alcohol Level] can be accurately used to measure the BAC.

Breath analysers are therefore routinely used to measure the BAC for medicolegal purposes. The legal Breath Alcohol limit for drivers under the Indian Motor Vehicles Act is 30 mg/ dL. One bottle of beer or two small pegs of whisky within one hour are likely to produce a BAC more than the legally acceptable limit for driving!

Drinking Patterns

Social Drinking:

Refers to drinking patterns that are acceptable in a given society. For example, in Western Societies it is acceptable to have a glass of wine at meal times. Within India, in certain parts, alcohol use is an acceptable part of festivities.

However, by and large India is considered a "dry" culture where drinking is disapproved and abstinence encouraged. This according to some, leaves those who do drink, without a model of social drinking to imitate; they thus might have a tendency to drink excessively.

Alcohol could also lower self-control. Thus the drinker often attributes his irresponsible behaviour consequent to drinking to alcohol rather than to himself.

Users expose themselves to possible harmful patterns of drinking: drinking to intoxication, drinking 'large amounts' over a small period, behaving irresponsibly such as being violent or disinhibited after drinking.

Drinking Limits

No more than

2 unit drinks per day for men, 1 drink per day for women

Never more than

4 drinks per occasion for men, 3 for women

And try not to touch alcohol at least 3 days a week

1 unit drink



1/3 sachet arrack

1 mug of beer (1/2 bottle)

One 30 ml. "peg" of spirits

These are prescribed levels in the west.....the levels for Indians are likely to be much lower

Moderate Drinking:

May be defined as drinking that does not generally cause problems, either for the drinker or for society. However there are clearly both benefits and risks associated with lower levels of drinking

Problem Drinking:

Problem drinking has been defined as: abnormal (usually excessive) drinking that leads to disturbance in social function and/or deterioration in health. Those affected include individuals, family members and society as a whole. Problem drinking can lead people to act unwisely or inappropriately while under the influence. They may act in ways that will later embarrass them or endanger their health, life, and the lives of others, by driving while intoxicated or otherwise acting irresponsibly.

Binge Drinking:

Characterized by the consumption of alcohol to intoxication within a short period of time. Some have defined a binge as the consumption of five or more drinks in a row for men and four or more in a row for women, five or more drinks per occasion, with a binge episode referring to the number of drinking days which are characterized by such occasions. Two or more binges within a two week period are regarded as frequent bingeing. The term has also been used in order to differentiate steady (daily) from non - steady drinkers.

Is 'Safe Drinking' possible?

There can be no universal "safe" drinking limits. A given dose of alcohol may affect different people differently. It is not just the total alcohol consumed, but the manner in which it is drunk that may influence harm (eg. one drink taken each day may have different consequences than seven drinks taken on a Saturday night). The so called 'Safe' limits of drinking have been calculated based on the "average number of drinks per week," in Western populations.

Consequences of Moderate Drinking

Although small quantities of alcohol consumption are known to reduce stress, decrease tension, and add to enjoyment in social situations, there is finally no guarantee that such use is safe for everyone. There is no certain way of predicting who will move from moderate use to more frequent or problem use.

Cardiovascular benefits of moderate drinking **- Protective effect of alcohol**

Although there is evidence that beyond a certain age (over 50 yrs) alcohol consumption of 5-20 gm/ day (i.e. 1/2 to 2 drinks) decreases risk for major coronary heart disease (CHD) the degree of protection has been over exaggerated. For individuals under 50 years of age 2 drinks per day increases all-cause mortality by 15-20%.

Adverse Consequences Linked to Moderate Drinking

Research shows that adverse consequences may occur at relatively low levels of consumption

Stroke

Moderate alcohol consumption increases the potential risk of strokes caused by bleeding, although it decreases the risk of strokes caused by blocked blood vessels.

Incidence of heart disease in those who consume moderate amounts of alcohol (an average of 1 to 2 drinks per day for men and 1 drink per day for women) is lower than that in nondrinkers.

However, with increased consumption of alcohol there are increased public health dangers, such as alcoholism, hypertension, obesity, stroke, cardiomyopathy, a number of cancers, liver disease, accidents, suicides, and fetal alcohol syndrome. In addition, some persons with an inherited predisposition to a variety of metabolic conditions, such as hypertriglyceridemia, pancreatitis, and porphyria should not consume alcohol at all.

For the person beginning to drink alcohol, alcohol addiction and alcoholism is a real threat, heightened by a familial predisposition to alcoholism

The American Heart Association emphasises that it is NOT advisable to issue guidelines to general population that may lead some persons to increase intake of alcohol or start drinking if they do not already do so. The risk / nonrisk of consuming alcohol in moderation is best determined in consultation with the individual's primary care physician.

Motor vehicle crashes

The relationship of alcohol with injuries has been well documented. Alcohol users increase their risk in two ways: the likelihood and seriousness of trauma. First, people who misuse alcohol are more likely than sober persons to be involved in an accident. Heavy drinkers have a higher risk for accidents than nondrinkers.

Second, in the event of an accident, a drinker is likely to be hurt more seriously than a nondrinker.

Impairment of driving-related skills by alcohol has been found to begin at 0.05 percent Blood Alcohol Level (BAC) or lower, with rapidly progressing deterioration as the BAC rises. A man weighing 65 kgs might attain a BAC of 0.05 percent (50 mg / dL) after two drinks.

Alcohol often complicates diagnosis of trauma-related injury:

1. Alcohol may mask or mimic the signs of a head injury in the casualty setting where the physician may mistake altered sensorium, slurring or memory lapses as signs of intoxication rather than serious head injury.
2. Alcohol can seriously complicate management and treatment. There is a significant risk in giving anaesthesia to intoxicated patients.
3. Ethanol and other drug reactions or interactions are possible and must be considered in any decisions involving medication, anesthesia, or surgery.

Physicians should assume alcohol involvement in trauma cases unless they have facilities for blood alcohol tests. Without such tests, it is impossible to know a patient's condition with confidence. Clinical signs of intoxication (e.g., slurred speech, bloodshot eyes, lack of coordination) may be absent and are sometimes unreliable.

Workplace accidents

The International Labour Organization estimates that :

- 20-25% of accidents at work involve intoxicated workers injuring themselves and their colleagues
- On the job fatalities linked to alcohol and drug use accounts for 15-30% of all accidents
- Absenteeism is 2-3 times higher for alcohol and drug users than for other employees

Such patients may present to the company physician or private practitioner either as an emergency or with various nonspecific complaints such as tiredness, sleeplessness, or aches and pains and periodically ask for medical certificates. Other conditions which rouse suspicion of underlying alcohol use are discussed in the section on management.



Alcohol:

- Impairs judgement and thought processes. Impaired judgement causes the person to take more driving risks
- Intoxicated drivers tend to underestimate the speed of their vehicles. Combined with slowed reaction time, this can lead to accidents causing serious injury or death to the drinker or others.
- Alcohol slows a person's reflexes. makes the pupil of the eye slower to respond to changes in light. Oncoming headlights are thus more likely to blind an intoxicated driver.
- Alcohol, as a depressant, causes drowsiness and increases the likelihood of falling asleep while operating a motor vehicle.

Alcohol and Insomnia

Insomnia is a feeling of inadequate or abnormal sleep. It includes a difficulty in initiating sleep, frequent awakenings, short sleep time or sleep that is not refreshing. Insomnia can occur due to many causes. Some people with this disorder may use alcohol as a temporary cure.

Though an alcoholic drink makes one go to sleep more quickly, the sedative effect does not last more than three to four hours. In fact, the quality of sleep after three to four hours may be disrupted leaving one struggling to get back to sleep. Recent research on the effect of alcohol on brain function in sleep suggests that alcohol is more likely to worsen insomnia.

Alcohol may also make snoring worse as well as aggravate the condition of obstructive sleep apnea. People with this under-recognized condition stop breathing and awake with a gasp many times a night resulting in profound fatigue the following day and higher blood pressure. The increased blood pressure is a potential risk for cardiovascular problems such as strokes, heart attacks and heart failure.

Cancer

Although most evidence suggests an increased risk for certain cancers only among the heaviest drinkers, moderate drinking may be weakly related to female breast cancer. The chances of developing breast cancer may be double in women drinking three to nine drinks per week compared to women drinking less than 3 drinks per week.

Birth defects

Children born to mothers drinking as low as two to three drinks per day during their pregnancy have been shown to be smaller in weight, length, and head circumference and have an increased number of minor physical anomalies. Lowered intelligence has been observed in children of mothers drinking as low as one drink per day.

Shift to heavier drinking

While many people may drink moderately without problems, it is impossible at present, to predict who will go on to develop heavier drinking with its associated problems. Recovering alcoholics, as well as people whose families have alcohol problems, may not be able to maintain moderate drinking habits. Once a person progresses from moderate to heavier drinking, the risks of social problems (for example, drinking and driving, violence, trauma) and medical problems (for example, liver disease, pancreatitis, brain damage, reproductive failure, cancer) increase greatly.

Interactions with medications

Alcohol may interact harmfully with more than 100 medications, including some sold over the counter. The effects of alcohol are especially augmented by medications that depress the function of the central nervous system, such as sedatives, sleeping pills, anticonvulsants, antidepressants, antianxiety drugs, and certain pain killers. There is a consequent increased danger of driving a vehicle after even moderate drinking if such medications are taken. In advanced heart failure, alcohol may not only worsen the disease, but also interfere with the function of medications to treat the disease.

Summary

1. Blood Alcohol Concentration can be influenced by the rate of drinking, body fat content, carbohydrate rich food and carbonated drinks
2. At different blood alcohol concentrations, there are varying behavioural effects, ranging from euphoria to coma, and even death
3. Quantity of alcohol is best expressed as Standard Drinks. One Standard Drink (One Unit) is 30 ml spirits or arrack (one third sachet), 60 ml wine, or half a bottle of beer (1 mug)
4. Metabolism of alcohol from the body occurs at a constant rate. The body metabolises one standard drink in one hour
5. There are no universal 'safe' drinking limits
6. While moderate drinking may have limited benefits, the risks of moderate drinking far outweigh the benefits
7. Risks from moderate drinking include accidents, strokes, other health problems as well as progression to heavier drinking
8. Moderate use and addiction are on a continuum of risk.

3. Alcohol - Medication Interactions

Alcohol-Medication Interactions

Many medications can interact with alcohol, leading to increased risk of illness, injury, or death.

How Alcohol and Medications Interact

Alcohol, like any other drug, travels through the bloodstream, acting upon the brain to cause intoxication, and is finally metabolized and eliminated, principally by the liver.

Typical alcohol-drug interactions include the following :

- First, an acute dose of alcohol may inhibit a drug's metabolism by competing with the drug for the same set of metabolizing enzymes. This interaction prolongs and enhances the drug's availability, potentially increasing the patient's risk of experiencing harmful side effects from the drug.
- Second, in contrast, chronic (long-term) alcohol ingestion may activate drug-metabolizing enzymes, thus decreasing the drug's availability and diminishing its effects. After these enzymes have been activated, they remain so even in the absence of alcohol, affecting the metabolism of certain drugs for several weeks after cessation of drinking. Thus, a recently abstinent chronic drinker may need higher doses of medications than those required by nondrinkers to achieve therapeutic levels of certain drugs.
- Third, enzymes activated by chronic alcohol consumption transform some drugs into toxic chemicals that can damage the liver or other organs.
- Fourth, alcohol can magnify the inhibitory effects of sedative and narcotic drugs at their sites of action in the brain. To add to the complexity of these interactions, some drugs affect the metabolism of alcohol, thus altering its potential for intoxication and the adverse effects associated with alcohol consumption.

Alcohol may interact with other medications :

- By reducing the rate of metabolism of the drug and therefore potentially increasing the harmful side effects from the drug (acute action of alcohol)
- By activating drug metabolising enzymes, thus encouraging rapid elimination, and therefore reduced drug effects (chronic effect of alcohol)
- Enzymes activated by chronic alcohol consumption increase the metabolism of other drugs thereby reducing their effect.
- Alcohol can magnify the inhibitory effects of sedative and narcotic drugs at their sites of action in the brain.

On the other hand, some drugs affect the metabolism of alcohol, thus altering its potential for intoxication and the adverse effects associated with alcohol consumption

Some Specific Interactions

Analgesics

Nonnarcotic pain relievers

Aspirin, ibuprofen and similar nonprescription analgesics are commonly used for pain relief. Some of these drugs cause stomach bleeding and inhibit blood from clotting; alcohol can exacerbate these effects. Older persons who mix alcoholic beverages with large doses of aspirin to self-medicate for pain are therefore at particularly high risk for episodes of gastric bleeding. Chronic alcohol ingestion activates enzymes that transform paracetamol into chemicals that can cause liver damage, even when paracetamol is used in standard therapeutic amounts. These effects may occur with as little as 2.6 grams of paracetamol in persons consuming widely varying amounts of alcohol.

Narcotic pain relievers

These drugs are prescribed for moderate to severe pain. They include the opioids morphine, codeine, (dextro) propoxyphene (Proxyvon), and pethidine. The combination of opioids and alcohol enhances the sedative effect of both substances, increasing the risk of death from overdose. A single dose of alcohol can increase the availability of propoxyphene, potentially increasing its sedative side effects. Users of illicit opioid drugs often use alcohol in addition so as to get a higher "kick".

Anesthetics

Chronic alcohol consumption increases the dose of pentothal required to induce loss of consciousness. However, the lethal dose for barbiturates is nearly 50% lower in the presence of alcohol than when it is used alone. Blood levels of pentothal as low as 0.5 mg / 100ml combined with blood alcohol levels of 0.1 g / 100 ml can cause death from respiratory depression.

Chronic alcohol consumption increases the risk of liver damage that may be caused by the anesthetic gases enflurane and halothane.

Antibiotics

In combination with acute alcohol consumption, some antibiotics may cause nausea, vomiting, headache, and possibly convulsions; among these antibiotics are furazolidone (Furoxone), griseofulvin, metronidazole (Flagyl), and the antimalarial quinacrine.

Consumption with cephalosporins, chloramphenicol, sulfonamides also causes flushing, headache, nausea and vomiting and dizziness similar to those triggered by disulfiram.

Isoniazid and rifampin are used together to treat tuberculosis, a disease especially problematic among alcoholics. Acute alcohol consumption decreases the availability of isoniazid in the bloodstream, whereas chronic alcohol use decreases the availability of rifampicin. In each case, the effectiveness of the medication may be reduced.

Anticoagulants

Warfarin (Coumarin) is prescribed to retard the blood's ability to clot. Acute alcohol consumption enhances warfarin's availability, increasing the patient's risk for life-threatening hemorrhages. Chronic alcohol consumption reduces warfarin's availability, thus reducing its protection against blood clotting.

Anticonvulsant medications

These drugs are prescribed mainly to treat epilepsy. Acute alcohol consumption increases the availability of phenytoin (Dilantin) and the risk of drug-related side effects. Chronic drinking may decrease phenytoin availability, significantly reducing the patient's protection against epileptic seizures, even during a period of abstinence.

Antidepressants

Alcoholism and symptoms of depression are frequently associated, leading to a high potential for alcohol-antidepressant interactions. Alcohol increases the sedative effect of tricyclic antidepressants such as amitriptyline (and others), impairing mental skills required for driving, working with heavy machinery etc. Acute alcohol consumption increases the availability of some tricyclics, potentially increasing their sedative effects; chronic alcohol consumption appears to increase the availability of some tricyclics and to decrease the availability of others. The significance of these interactions is unclear. These chronic effects persist in recovering alcoholics. Tricyclic antidepressant use should be monitored closely in alcoholic patients.

Alcohol when taken with some antidepressants such as monoamine oxidase inhibitors can cause a dangerous rise in blood pressure, due to tyramine, found in some beers and wine. As little as one standard drink may cause this interaction.

Antidiabetic medications

Oral hypoglycemic drugs are prescribed to help lower blood sugar levels in some patients with diabetes. Acute alcohol consumption prolongs, and chronic alcohol consumption decreases, the availability of tolbutamide. Alcohol also interacts with some drugs of this class to produce symptoms of nausea and headache such as those described for metronidazole (see "Antibiotics").

Antihistaminics

Drugs such as diphenhydramine (Avil and others) are available without prescription to treat allergic symptoms and insomnia. Alcohol may intensify the sedation caused by some antihistaminics. These drugs may cause excessive dizziness and sedation in older persons; the effects of combining alcohol and antihistaminics may therefore be especially significant in this population.

Antipsychotic medications

Drugs such as chlorpromazine (Largactil) are used to treat psychotic symptoms such as delusions and hallucinations. Acute alcohol consumption increases the sedative effect of these drugs, resulting in impaired coordination and potentially severe and even fatal respiratory depression and hypotension. The combination of chronic alcohol ingestion and antipsychotic drugs may result in liver damage.

Cardiovascular medications

This class of drugs includes a wide variety of medications prescribed to treat ailments of the heart and circulatory system. Acute alcohol consumption interacts with some of these drugs to cause dizziness or fainting upon standing up. These drugs include nitroglycerin, used to treat angina, and reserpine, methyldopa (Aldomet), hydralazine, and guanethidine, used to treat high blood pressure. Chronic alcohol consumption decreases the availability of propranolol (Inderal), used to treat high blood pressure, potentially reducing its therapeutic effect.

Sedatives and hypnotics

Benzodiazepines such as diazepam (Calmpose), lorazepam, alprazolam, nitrazepam and flurazepam are generally prescribed to treat anxiety and insomnia. Doses of benzodiazepines that are excessively sedating may cause severe drowsiness in the presence of alcohol, increasing the risk of household and automobile accidents. This may be especially true in older people, who demonstrate an increased response to these drugs. Low doses of flurazepam interact with low doses of alcohol to impair driving ability, even when alcohol is ingested the morning after taking flurazepam. Since alcoholics often suffer from anxiety and insomnia, and since many of them take morning drinks, this interaction may be dangerous.

Interactions between Alcohol and Various Classes of Medications

Medication	Type of interaction
Analgesics	<p>Aspirin increases gastric emptying, leading to faster alcohol absorption in the small intestine.</p> <p>Alcohol enhances paracetamol metabolism into a toxic product, potentially causing liver damage</p> <p>Alcohol enhances sedation effects of narcotic pain killers</p>
Anesthetics	<p>Chronic alcohol consumption can lead to increase in dose of anesthetic required to induce anesthesia</p> <p>Combining alcohol and anesthetics carries increased risk of death from respiratory depression</p>
Antibiotics	<p>Erythromycin may increase gastric emptying, leading to faster alcohol absorption in the small intestine.</p> <p>Alcohol increases the risk of isoniazid-related liver disease</p>
Anticoagulants	<p>Acute intoxication may increase anticoagulation by decreasing warfarin metabolism; chronic alcohol ingestion decreases anticoagulation by increasing warfarin metabolism</p>
Anticonvulsants	<p>Chronic alcohol consumption induces phenytoin breakdown, leading to lower phenytoin levels</p>
Antidepressants	<p>Alcohol increases sedative action of these drugs</p>
Antidiabetic agents	<p>Alcohol along with antidiabetic medication increases the risk of lower than normal blood sugar</p> <p>Chlorpropamide and tolbutamide can cause disulfiram like interactions after alcohol ingestion</p> <p>Metformin can cause increased levels of lactic acid in the blood after alcohol consumption</p>
Antihistaminics	<p>Alcohol enhances the CNS effects of such drugs, including drowsiness, sedation and decreased motor skills</p>
Antipsychotics	<p>Alcohol increases sedation effects of antipsychotics</p> <p>Combinations can cause severe and potentially fatal respiratory depression and hypotension</p> <p>Combination increases risk of liver damage</p>
Sedative/hypnotics	<p>Chronic alcohol intake increases barbiturate metabolism by cytochrome p450</p> <p>Alcohol enhances the sedative and hypnotic effects of barbiturates and benzodiazepines on the CNS</p> <p>Alcohol enhances the effects of barbiturates on the CNS, such as drowsiness, sedation and decreased motor skills</p>

Summary

1. Alcohol interacts with many medications influencing their availability, effectiveness and metabolism:
 - Acute alcohol intake can reduce the rate of metabolism of many drugs and therefore increase their harmful effects
 - Chronic alcohol consumption can cause rapid elimination of the drug and reduce its efficacy
 - Enzymes activated by alcohol can increase metabolism of other drugs and reduce their availability
 - Alcohol can magnify the effects of drugs like sedatives and narcotics at their sites of action in the brain.
2. Commonly prescribed drugs such as analgesics, antihistaminics, antibiotics, cardiovascular medications, antidiabetics and sedative hypnotics have significant interactions with alcohol.
3. The physician must be aware of these interactions and advise the patient not to use alcohol while prescribing any such medications.
4. Prior to surgical procedures, the patient must be asked about prior alcohol consumption, because this can influence the requirement and dose of the anesthetic required. The physician must also anticipate acute withdrawal in dependent patients.

4. Alcohol complicating or causing illness

Alcohol Complicating or Causing Illness

Alcohol and the digestive tract

Alcohol has widespread and varied effects on the gastrointestinal tract. Consumption relaxes both the upper and lower gastric sphincters. The well-known condition of “heartburn” occurs when digestive enzymes and acids escape from the stomach through the upper valve and irritate the lower oesophagus. This is “reflux oesophagitis”, and if it becomes an ongoing problem, ulceration of the lower oesophagus can occur.

In addition to being a depressant drug, alcohol is also a chemical irritant and a solvent. When consumed in concentrations above 40% it produces a direct erosion of the stomach mucosa, damaging the tissues (gastritis). Stomach tissues are eventually digested away through one or more levels of the smooth muscle that surrounds the stomach creating crater-like “ulcers”. Upper gastrointestinal pain and bleeding is very common in alcoholics due to hemorrhagic gastritis (acute mucosal lesions) and are often the first complaints that bring alcoholic patients to medical care. [Alcohol ingestion is not a causative factor in peptic ulcer disease]. Erosive hemorrhagic gastritis is the common manifestation of acute alcohol consumption, whereas a superficial atrophic type of nonerosive gastritis is seen with chronic consumption

Peptic oesophagitis, leads to greater risk for oesophageal carcinoma.

The small intestine or duodenum is another target of the corrosive and irritating effects of alcohol. Inflammation and ulceration can occur along the length of the small intestine, but the segment close to the stomach is most at risk. Continued ulceration may proceed to perforation, peritonitis and can cause death if not quickly treated.

The inflamed duodenum is unhealthy and loses efficiency in absorbing nutrients from a meal. This “malabsorption syndrome” results in poor uptake of key vitamins especially K, D, A, and thiamine. The body is unable to manufacture these vitamins, leading to diseases caused by vitamin deficiency.

Diarrhea and malabsorption is commonly associated with alcohol - due to several interacting factors: increased intestinal motility, decreased absorption due to distribution of small intestinal villi, increased splanchnic circulation etc.

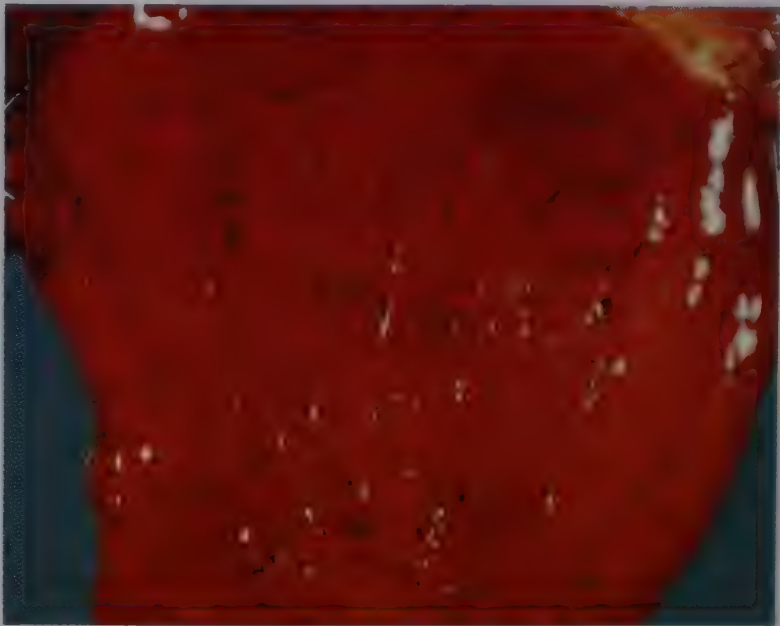
Chronic alcohol use also promotes haemorrhoids and causes increased propulsive motility of the colon.

Increased salivation, parotid enlargement is seen in 15% patients with simple alcohol abuse and 50% of alcohol hepatitis/cirrhosis.

Alcohol and the liver

All of the alcohol that is absorbed from the stomach and small intestine passes through the liver. Alcohol is a direct toxin to the liver. The healthy liver can metabolize alcohol at the rate of about 1 drink per hour. People who drink large amounts of alcohol, or who have been drinking for a long time increase their risk of developing liver disease.

Alcohol and Gastrointestinal symptoms		
Complaints	Mistaken for	Due to
Poor appetite	Peptic ulcer	Oesophagitis
Indigestion	Viral	Gastritis
Heartburn	Hepatitis	Enteritis
Vomiting	Gall stones	Mallory Weiss
Diarrhoea		Syndrome
Bleeding		Pancreatitis
Jaundice		Alcoholic hepatitis / cirrhosis



Typical acute gastritis with a diffusely hyperemic gastric mucosa. There are many causes for acute gastritis: alcoholism, drugs, infections, etc

Hepatic steatosis [fatty liver]

Is usually silent, characterised by non symptomatic hepatomegaly, but may rarely progress to severe hepatocellular failure with cholestasis and portal hypertension. At least nine out of ten chronic alcoholics will develop alcoholic fatty liver. Plaques of fat invade the normal structure of the liver to cause this condition. If a person stops drinking, fatty liver will disappear on its own in 4 to 6 weeks without formalized medical treatment. If drinking continues, fatty liver may progress to hepatitis.

Alcoholic Hepatitis

"Hepatitis" is a general word that refers to swelling or inflammation of the liver. Hepatitis can be caused by viral infection or by toxic chemicals in the bloodstream. "Alcoholic hepatitis" is caused by the toxic effects of alcohol on the liver after long-term use. Alcoholic hepatitis usually occurs after fatty liver but may appear without any previous liver dysfunction. Ten to thirty percent of alcoholics will develop hepatitis if they continue to abuse alcohol. In fulminant hepatitis short term mortality may be 20-60%.

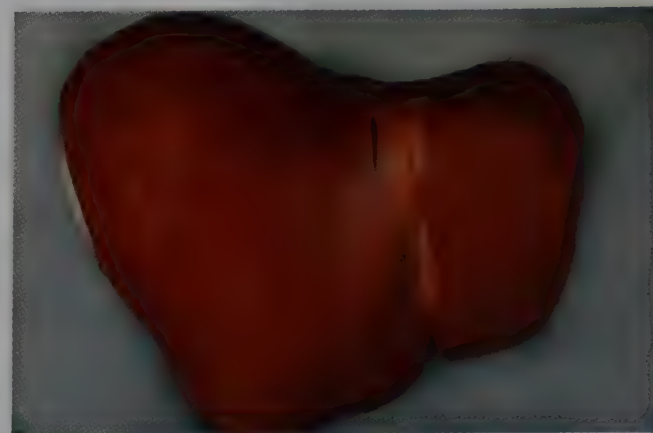
Diagnosis of alcoholic hepatitis is made by combining a patient's symptoms with lab tests and physical examination findings.

Typically, a person with alcoholic hepatitis would feel generally ill. Loss of appetite and weight, a low grade fever, abdominal pain, nausea and vomiting are frequent symptoms.

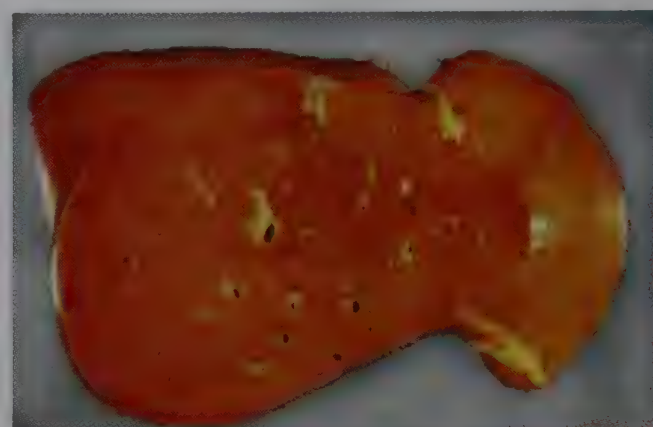
On examination, there is an enlarged, somewhat tender liver. Laboratory tests of liver function are also abnormal.

Clinical findings and laboratory tests are usually sufficient to provide reasonable indication of the presence and extent of hepatic injury. A liver biopsy is not usually necessary to confirm the typical findings of alcoholic hepatitis or cirrhosis. It may be helpful in evaluating patients with clinical features suggestive of alcoholic liver disease who deny alcohol intake, to differentiate milder forms of liver disease from cirrhosis, and exclude other forms of liver injury.

Treatment of alcoholic hepatitis involves abstinence from alcohol and provision of adequate nutrition. There are no drugs that will restore the liver quickly to its normal state.



External surface of a normal liver. The colour is brown and the surface is smooth. A normal liver is about 1200 to 1600 grams



This liver is slightly enlarged, has a pale yellow appearance, seen both on the capsule and cut surface. This uniform change is consistent with fatty change

Fatty Liver		
Clinical picture	Typical Patient	Lab findings
<ul style="list-style-type: none"> * Usually, no obvious symptoms * In advanced cases—hepatic tenderness, anorexia, nausea, vomiting, jaundice. 	<ul style="list-style-type: none"> * Young or middle aged * History of heavy alcohol use for weeks or months * Solid, smooth palpable liver * Mild tenderness common * Sometimes severe epigastric or right upper quadrant pain 	<ul style="list-style-type: none"> * SGOT, SGPT elevation (slight to moderate) * Alkaline Phosphatase and bilirubin may be elevated

Alcoholic Hepatitis		
Clinical picture	Typical Patient	Lab findings
<ul style="list-style-type: none"> * May be asymptomatic * Commonly anorexia, nausea, vomiting weight loss, abdominal distress and jaundice 	<ul style="list-style-type: none"> * Febrile * Tender hepatomegaly * Splenomegaly in a third * In severe cases, ascites, edema, bleeding and encephalopathy 	<ul style="list-style-type: none"> * Leucocytosis * Raised bilirubin, Alkaline Phosphatase * SGOT/SGPT ratio more than 2 * Prolonged prothrombin time

Both fatty liver and alcoholic hepatitis can be present in association with cirrhosis.

Alcoholic Cirrhosis

A close correlation exists between per capita consumption and cirrhosis morbidity . Five to ten percent of all alcoholics develop cirrhosis of the liver. It usually develops after a long history of excessive alcohol intake. Alcoholic cirrhosis becomes symptomatic at an average age of 50 years, especially when not complicated by acute fatty liver or alcoholic hepatitis. The development of alcoholic liver disease correlates with both the magnitude and duration of alcohol consumption. The risk for cirrhosis is increased 5 times with a consumption between 80 and 160g/day (8 to 16 drinks), and 25 times if daily alcohol consumption exceeds 160g. The average cirrhogenic doses as well as threshold doses are lower in females. The disease may follow alcoholic hepatitis or may occur without any previous symptoms.



Micronodular cirrhosis. The regenerative nodules are quite small, averaging less than 3 mm in size. The most common cause for this is chronic alcoholism. The process of cirrhosis develops over many years.

A liver with alcoholic cirrhosis is scarred and irreversibly damaged. If drinking continues the liver will become so severely damaged that it fails to function, leading to features of hepatic failure. If drinking stops and the patient consumes a nutritious diet, no further damage will occur. Depending on the amount of organ damage, the remaining healthy portion of the person’s liver may be sufficient to carry out its vital functions.

Alcoholic Cirrhosis	
Clinical picture	Lab findings
<ul style="list-style-type: none">* Usually presents around 50 years of age* Smaller-than-normal liver with hardened, bumpy nodules.* Tiredness, loss of appetite and weight loss [unless masked by ascites], nausea, and abdominal pain.* Jaundice in 2/3 of cases* Low grade continuous fever in 2/3 . <p>Secondary complications:</p> <ul style="list-style-type: none">* Portal hypertension with splenomegaly and ascites, encephalopathy with asterixis, gastrointestinal hemorrhage from oesophageal/gastric varices, caput medusae, edema and bleeding tendencies.* Tertiary complications: Peritonitis, gynecomastia, female pattern of pubic hair distribution, spider angiomas, palmar erythema, parotid enlargement and Dupuytren’s contractures	<ul style="list-style-type: none">* Impaired liver function tests as described earlier* Prolonged prothrombin time* Hypoalbuminemia* Hyperglobulinemia* Elevated ammonia* Glucose intolerance* Anemia* Leucopenia and thrombocytopenia (due to hypersplenism)* Other metabolic and electrolyte disturbances* Abdominal ultrasound is also useful

Alcohol and the Liver : Some Common questions answered

- *How much alcohol can a person safely drink?*

Because some people are much more sensitive to alcohol than others, there is no single right answer that will fit everyone. Generally speaking, drinking more than two drinks per day carries a higher risk. This risk is much higher in those vulnerable to alcohol liver disease.

- *Are there dangers from alcohol besides the amount that is consumed?*

Even moderate amounts of alcohol can have toxic effects when taken with over-the-counter drugs containing paracetamol. If your patient is taking over-the-counter drugs, tell him to be especially careful about drinking and not using an alcoholic beverage with such medication.

- *Can “social drinkers” get alcoholic hepatitis?*

Alcoholic hepatitis is frequently discovered in alcoholics, but also occurs in people who are not alcoholics. People vary greatly in the way their liver reacts to alcohol.

- *Are women more likely to get alcoholic hepatitis?*

Women appear to be more likely to suffer liver damage from alcohol. Even when a man and woman have the same weight and drink the same amount, the woman generally has a higher concentration of alcohol in the blood because she has relatively more body fat and less water than the man, and her body handles alcohol differently.

- *Do all alcoholics get alcoholic hepatitis and eventually cirrhosis?*

Some alcoholics suffer seriously from the many physical and psychological symptoms of alcoholism but may escape serious liver damage. Alcoholic cirrhosis is found among alcoholics about 10-25 percent of the time.

Family relationships and work performance get affected far earlier than the liver !!!!

Alcohol and Nutrition

For many alcoholics, alcohol is a major source of calories. An alcoholic would much rather drink alcohol than eat proper food which would provide him with the daily nutrient requirement. Alcohol contains about 9,000 calories (9 Kcal) per gram. However, these calories do not provide any of the carbohydrates, protein, fat, vitamins or minerals needed to maintain body functions.

Alcohol's toxic effect on the gastrointestinal tract also promotes poor nutrition. Alcohol irritates the gut wall, leading to inflammation and ulceration. This can result in a poor absorption of nutrients and poor digestion.

Several diseases associated with alcoholism are brought on because of the alcoholic's poor nutritional state: Wernicke's encephalopathy is associated with low thiamine levels caused by malabsorption from the stomach and decreased nutritional intake. Deficiencies of niacin can result in pellagra, pyridoxine in peripheral neuropathy.

Anemias can result from decreased intake of iron, vitamin B-12, and folic acid.

Treatment of malabsorption is difficult. The patient must first stop consuming alcohol. Hospitalization and intravenous nutrition may be needed while his or her gut is recovering from chronic alcohol exposure. After the digestive system regains normal function, continued abstinence from alcohol is necessary for the alcoholic to remain in a good nutritional status.

Alcohol and the Pancreas

Pancreatitis

Is found in a small percentage of heavy alcohol users. Severe, constant pain localized to upper abdomen radiating to the back, often relieved by leaning forward.

Mild attacks last 2-3 days. Severe attacks persist for 2-4 weeks and associated with hypertension and mortality of upto 30%. Mild fever commonly in first few days, with high swinging fever indicative of an abscess. Complications include renal dysfunction, mild jaundice, coagulation disturbances, hypocalcemia, psychotic reactions, and spread of inflammation to contiguous organs.

Clinical course: The first attack usually occurs after 10-15 years of heavy drinking (160-80gm/day) usually in males in the fourth decade of life. Recurrent attacks are precipitated by alcohol abuse at intervals of weeks/months. Gradually they become more frequent and severe and are complicated by diabetes and malabsorption.



Typical beaded necklace skin lesions in pellagra, caused by avitaminosis. Commonly seen in alcoholics

Malnutrition can occur because:

1. Alcohol is a poor source of nutrients
2. Alcohol irritates the gut leading to poor absorption of nutrients
3. Heavy drinkers, or individuals with complications of alcoholism, especially memory problems, may have poor dietary intake

Pancreatitis		
Clinical Picture	Typical Patient	Lab Findings
<ul style="list-style-type: none"> • Severe upper abdominal pain, classically radiating to the back • Fever • Hypertension • Jaundice <p>Complications include:</p> <ul style="list-style-type: none"> • Renal dysfunction • Coagulation disturbances • Hypoglycemia • Psychosis 	<ul style="list-style-type: none"> • Severe upper abdominal pain, classically radiating to the back • Distressed and anxious • Tachycardia • Hypotensive • May present in shock 	<ul style="list-style-type: none"> • Serum amylase increased in acute and normal or slightly increased in chronic pancreatitis • Leucocytosis • Hyperglycemia • Evidence of other exocrine and endocrine dysfunction • Abdominal ultrasound/abdominal CT can provide additional information

Alcohol and Diabetes

Alcohol Impairs Regulation of Blood Sugar Levels

Glucose is the main energy source for all tissues. Glucose is derived: from food, from synthesis in the body, and from breakdown of glycogen stored in the liver.

Insulin lowers the glucose concentration in the blood, glucagon raises it. Because prevention of hypoglycemia is vital for the body, several hormones from the adrenal glands and pituitary back up glucagon function.

Alcohol consumption interferes with all three glucose sources and with the actions of the regulatory hormones. Chronic heavy drinkers often have insufficient dietary intake of glucose. Without eating, glycogen stores are exhausted in a few hours. In addition, the body's glucose production is inhibited while alcohol is being metabolized. The combination of these effects can cause severe hypoglycemia 6 to 36 hours after a binge- drinking episode.

Even in well-nourished people, alcohol can disturb blood sugar levels. Acute alcohol consumption, especially in combination with sugar, augments insulin secretion and causes temporary hypoglycemia. In addition, acute alcohol consumption can impair the hormonal response to hypoglycemia.

Chronic heavy drinking, in contrast, has been associated with excessive blood glucose levels (hyperglycemia). Chronic alcohol abuse can reduce the body's responsiveness to insulin and cause glucose intolerance in both healthy individuals and alcoholics with liver cirrhosis. In fact, 45 to 70 percent of patients with alcoholic liver disease are glucose intolerant or are frankly diabetic.

Alcohol consumption can be especially harmful in people with a predisposition to hypoglycemia, such as patients who are being treated for diabetes. Alcohol can interfere with the management of diabetes in different ways. Acute as well as chronic alcohol consumption can decrease the effectiveness of hypoglycemic medications . Treatment of diabetes by tight control of blood glucose levels is difficult in alcoholics, and both hypoglycemic and hyperglycemic episodes are common. Alcoholics with diabetes have a significantly lower survival rate than other alcoholics.

Risk of Low Blood Glucose

A patient with diabetes mellitus on insulin injections or oral diabetes pills, suffers a risk of low blood glucose when he or she drinks alcohol. People on long – acting oral anti-diabetics, such as chlorpropamide are at greater risk for very low blood glucose when drinking.

Patients must be clearly warned about mixing long-acting diabetes pills with alcohol.

Low blood glucose when drinking is less of a risk for those with type 2 diabetes who control their diabetes by diet and exercise alone.

Heavy drinking over time can damage the liver to the extent that diabetes is harder to control.

Some of the signs of drinking too much, such as confusion or slurred speech, are similar to the effects of a low blood glucose reaction or ketoacidosis (most common in people with type 1 diabetes who have taken too little insulin).

Alcohol can make some diabetic problems worse.

Diabetic neuropathy: Alcohol is neuro-toxic. Drinking can increase the pain, burning, tingling, numbness, and other symptoms found with nerve damage. Some studies show that even regular light drinking (less than two drinks per week) can bring on nerve damage.

Diabetic optic neuritis: Heavy drinking (3 or more drinks per day) may make diabetic eye disease worse.

Hypertension: Patients can lower high blood pressure if they stop drinking alcohol.

Hypertriglyceridemia: Many people with diabetes have high levels triglyceride in their blood. Alcohol affects how the liver clears fat from the blood. Alcohol also spurs the liver on to make more triglycerides. Even light drinking can raise triglyceride levels.

Alcohol and Cardiovascular Disorders

Alcohol in Hypertension

Alcohol is related to an increased prevalence of hypertension (50%). Increase in systolic pressure is associated with subjects consuming approximately 20-40 gms of ethanol per day.

Alcohol withdrawal produces intense psychomotor agitation and sympathetic overactivity. More than 50% of alcoholics undergoing detoxification have systolic pressure greater than 140mm Hg, diastolic greater than 90mm Hg.

Alcohol and the heart

Alcohol abuse produces a wide spectrum of cardiac disorders. Chronic alcoholics, although not exhibiting any clinically apparent heart disease, may have subtle abnormalities of cardiac functioning.

- Heavy alcohol users are more than twice as likely to have high blood pressure than non-drinkers.
- Alcohol combined with other risk factors leads to a greater risk for developing heart disease. Patients who already have heart disease are extremely sensitive to alcohol's effect on the heart. Other risks include a family history of heart disease, smoking, being overweight, high B.P

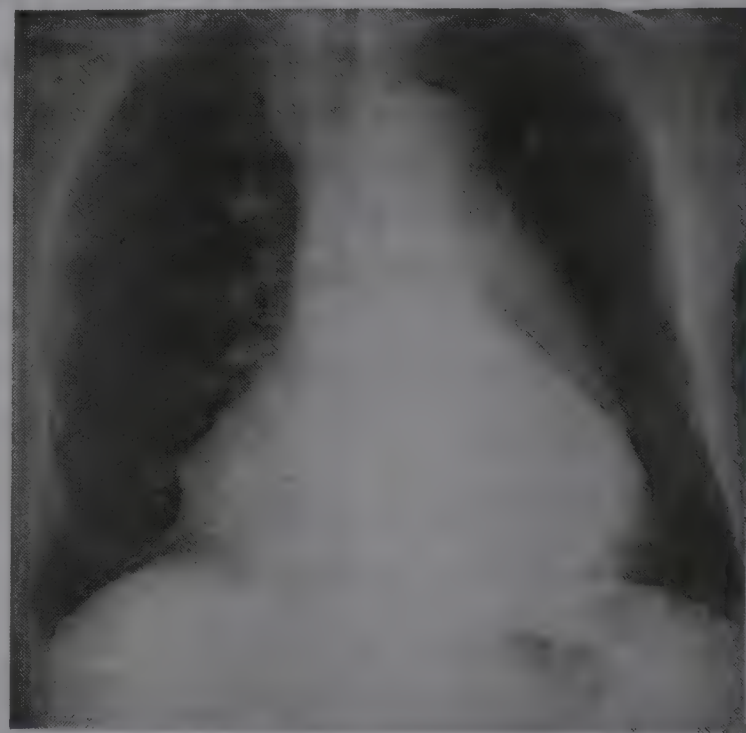
Alcoholic cardiomyopathy

A form of dilated cardiomyopathy caused by habitual, excessive use of alcohol, the disorder is most commonly seen in males between ages 35 to 55 years but it may become evident in older individuals. Alcohol has a directly toxic effect on heart muscle cells. The heart muscle is too weak to pump efficiently and the symptoms of alcoholic cardiomyopathy are a result of heart failure.

The initial presentation may be subtle : breathlessness (out of proportion to signs of heart failure, often ascribed to primary pulmonary disease - a not uncommon association in the alcoholic cigarette smoker). Cough, especially at night, may be attributed to persistent upper respiratory infection. Angina pectoris is usually absent. Obstructive coronary disease may be coincidentally present but most patients do not have coronary circulation abnormalities. Later, easy fatigability (due to low, fixed cardiac output), palpitation (due to arrhythmia) anorexia and abdominal discomfort (due to hepatic/ intestinal congestion) and edema are common.

Alcohol and the Cardiovascular System

- * Poor blood pressure control
- * Cardiac enlargement and failure
- * Arrhythmias
- * Peripheral vasodilatation leading to hypothermia
- * Stroke
- * Cerebral haemorrhage



This chest X-ray demonstrates marked cardiomegaly, with the left heart edge appearing far to the left.

Systemic blood pressure may be elevated during periods of acute-pulmonary edema but blood pressure is otherwise generally normal/low. Apical impulse is displaced caudally and laterally (cardiomegaly). Characteristic auscultatory findings are a gallop rhythm with loud S3 and S4 sounds, an accentuated pulmonic closure sound, a diminished first heart sound and a soft apical systolic murmur.

ECG - findings of diffuse myocardial disease : broad enlarged P waves (intraatrial conduction abnormality and biatrial enlargement). Atrial fibrillation or flutter may be seen in 10-20% with increasing dilatation.

Cardiomyopathy could lead to arrhythmias, including lethal arrhythmias.

Holiday Heart

After long-term alcohol drinking an abnormal heart beat - "cardiac arrhythmia" may be a frequent complication. Arrhythmias have been related to alcohol abuse even in subjects without evidence of heart disease or electrolyte imbalance. They usually occur after binge drinking. They are characteristically present with atrial arrhythmias, especially atrial fibrillation.

Alcohol and the Haematological System

Anaemia

Megaloblastic anaemia (>100 microns) due to folate deficiency is the most common (15-60%) cause of anaemia in chronic alcoholics. Iron deficiency anaemia, usually a result of gastrointestinal blood loss is also common.

Thrombocytopenia

There is an association between alcohol intoxication and thrombocytopenia (15-60%) in seriously ill hospitalised alcoholics. It occurs in the absence of associated folate deficiency and recurs after a short time after discharge from hospital in well nourished patients. Granulocytopenia has also been reported in association with alcohol intoxication. A paradoxical granulocytopenia is reported in alcoholics with severe bacterial infections.

Lymphocytopenia - is commonly seen in association with alcoholic hepatitis and cirrhosis.

Alcohol, Immune Response and Infective Disorders

There is increasing evidence that ethanol may directly affect the immune system

Both short-term and long-term alcohol abuse make it easier for an alcoholic to contract diseases. The body has mechanical barriers to disease (such as the skin) and natural immune defences, which are the cells in the body which fight disease. Both are inhibited or impaired by alcohol.

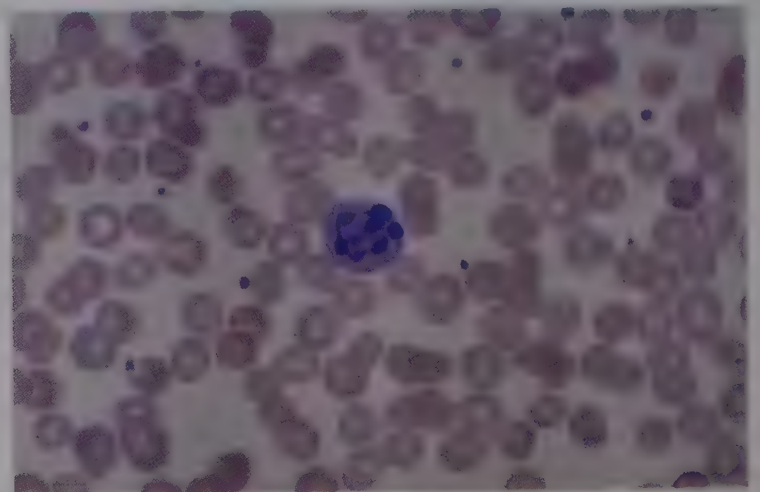
In a person who is very drunk, the cough or gag reflex may be impaired. This permits bacteria and vomit entering the lungs to cause choking or infection.

Alcohol abusers frequently contract pneumonia and other lung infections. The most common type is "aspiration pneumonia." The patient becomes unable to clear secretions from the lungs, resulting in poor clearance of dirt and bacteria leading to infection.

The cell-mediated immunity of the body is also affected by both acute and chronic alcohol use. The bone marrow produces white blood cells that engulf harmful bacteria entering the body. Alcohol is known to suppress the bone marrow's production of these cells, thus impairing immunity. Cell mediated immunity is primarily responsible for stopping and controlling tuberculosis infections. Consequently, alcoholic patients get tuberculosis infections more easily than others. The ability to kill viruses is similarly diminished.



This very large heart has a globoid shape because all of the chambers are dilated. It is very flabby, and the myocardium is poorly contractile. This is an example of a cardiomyopathy. The myocardium functions poorly and the heart is large and dilated.



Here is a hypersegmented neutrophil that is present with megaloblastic anemias. Such anemias can be due to folate or to B12 deficiency. The size of the RBC's is also increased (Macrocytosis, which is hard to appreciate in a blood smear).

Alcoholics often get other kinds of infections as well, including infections of one or more of the heart valves (endocarditis); infections of the brain and spinal cord (meningitis); and infections of the abdominal wall lining (peritonitis).

Because alcoholics' health is poor, such infections can be life-threatening and require urgent medical treatment.

Antibiotics are able to handle most infections, but an alcoholic may also need treatment to prevent alcohol withdrawal. Although treatment for specific illnesses is usually successful, it is only a temporary relief. The cycle of poor health, sickness and treatment continues unless the alcoholic is able to give up drinking and enter alcoholism treatment.

Alcohol can increase susceptibility to infection by:

- * Lowering immunity
- * Increasing risk of aspiration
- * Increasing possibility of unprotected sex and risk of sexually transmitted diseases

Alcohol and Tuberculosis

In a study done at NIMHANS 5% of patients admitted for treatment of alcoholism had radiological evidence of pulmonary tuberculosis and 3% were sputum positive. Most of these patients belonged to a lower socio-economic background, where in addition to alcoholism, overcrowding and poor nutrition can be compounding factors. The relationship between tuberculosis and alcoholism raises several public health issues. For example, patients with tuberculosis who continue to drink are very likely to be non compliant with antituberculous medication, thus suffering the disease as well as increasing the likelihood of treatment resistance.

Alcohol and HIV infection

Alcohol use and engagement in unsafe sex is well documented. High risk sexual behaviour is prominently associated with alcohol misuse and studies have shown that this population is at high risk of developing HIV and other sexually transmitted disorders. A NIMHANS study showed that around 40% of people with alcohol dependence had associated high risk sexual activity and 75% of people who were HIV positive had heavy alcohol use.

While alcohol abuse causes lymphopenia, there is no evidence that it plays any part in an individual's susceptibility to HIV infection or disease progression.

Alcohol and Muscle

Common musculoskeletal sequelae of alcoholism may occur due to alcohol per se or due to trauma secondary to alcohol consumption.

Alcohol and the Musculoskeletal System

- | | |
|---------------|---------------------|
| * Backache | * Repeated injuries |
| * Joint pains | * Myopathy |
| * Gout | |

Acute myopathy

This has an acute onset, after a bout of drinking. It is characterised by painful, tender, swollen, firm but weak muscles of one or more groups. The involvement is patchy, and often distal muscle groups are affected. It may sometimes be associated with neuropathy. Myopathy is associated with elevated (often very high) levels of serum creatinine kinase and lactate dehydrogenase. Myoglobinuria is a common complication with associated acute tubular necrosis and renal failure.

Chronic myopathy

This is of gradual onset, usually painless, symmetrical, proximal muscle wasting and weakness, most obvious in the legs. Associated neuropathy is frequently found but not significant myoglobinuria. An occasional moderate rise of serum creatine kinase may be present.

Alcohol And Bone

Long term use of excess alcohol causes extensive bone loss and osteoporosis. Moderate (80 - 130 gm/day) and heavy intake (>130 gm /day) can cause upto 50% reduction in bone mass.

Alcohol-Induced Fractures

Excessive alcohol intake increases the risk of fractures. In addition to falls, excess use of alcohol can lead to increased skeletal fragility and increase the risk of fractures. Bone density is an important determinant of bone strength and is a predictor of fractures.

The bone mass of young alcoholic males is comparable to that of elderly, post-menopausal females.

There are clearly demonstrated clinically relevant reductions in bone mass in alcoholics, especially in the heel bone, vertebral column, and hip.

The changes in bone turnover induced by alcohol can apparently be reversed by abstinence.

Alcohol and Sexual Disorders

Chronic alcoholism may lead to feminization of men. Alcohol has a direct effect on the testes and also the brain to cause sterility, impotence, enlarged breasts, as well as a change in body hair distribution. Alcohol-induced liver damage decreases the amount of testosterone, the hormone that is responsible for male sex characteristics, produced by the liver.

Alcohol does not increase a person's sexual performance (as an intoxicated person might believe) but actually impairs a person's ability to perform. Alcohol at low doses inhibits anxiety and promotes relaxation. At higher doses and with chronic use, alcohol decreases desire and interest: Sexual enjoyment is blunted.

Poor judgement while intoxicated may lead to risky unprotected sex (eg. not using condom, sex with multiple partners). It may result in exposure to AIDS or other sexually transmitted diseases, as well as in unwanted pregnancy.

Alcohol and Skin Disease

Bruises and scars are the commonest skin manifestations in drinkers, both following intoxication and in chronically dependent individuals. Dermatological disease, particularly psoriasis and discoid eczema is an important marker of alcohol misuse at any early and possible reversible stage in the disease.

Psoriasis

The odds ratio of developing psoriasis for a man drinking more than 100mg alcohol/day is 2.2. The pattern of involvement differs from psoriasis vulgaris (skin is either very inflamed with minimal scale, typically involving face, groin and flexures; or hyper keratotic particularly in acral distribution) and is more difficult to treat.

Other Dermatological Conditions

Other dermatological conditions associated with alcohol use include discoid eczema, rosacea, acne and porphyria cutanea tarda.

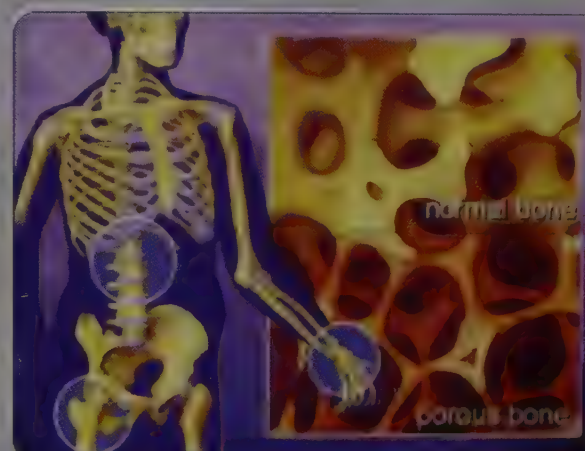
Alcohol and Other Physical illnesses

In many illnesses including cancers, gastrointestinal, hepatic disorders and disorders that cause chronic pain or distress, use of alcohol to overcome fatigue or distress due to the disease is common. The effects of alcohol use or withdrawal may mimic or be camouflaged by the signs and symptoms of the medical illness. Unfortunately, although alcohol may produce temporary analgesia, it is an inappropriate way of handling pain or distress, and may itself become a problem, compounding the problems caused by the primary physical illness. The primary care physician needs to discuss with the patient the risks of using alcohol as an analgesic, and simultaneously address the need for pain and symptom relief with appropriate advice.

Alcohol Impairs Calcium Metabolism and Bone Structure

Alcohol can interfere with calcium and bone metabolism in several ways. Acute alcohol consumption can lead to a transient Parathyroid deficiency and increased urinary calcium excretion, resulting in loss of calcium from the body. Chronic heavy drinking can disturb Vitamin D metabolism, resulting in inadequate absorption of dietary calcium.

Studies in alcoholics also have shown that alcohol is directly toxic to bone-forming cells and inhibits their activity. In addition, chronic heavy drinking can adversely affect bone metabolism indirectly, for example by contributing to nutritional deficiencies of calcium or vitamin D. Liver disease and altered levels of reproductive hormones, both of which can be caused by alcohol, affect bone metabolism.



Calcium deficiency can lead to bone diseases, such as osteoporosis. Osteoporosis is characterized by a substantial loss of bone mass and, consequently, increased risk of fractures. In alcoholics, the risk of osteoporosis is increased. Because many falls are related to alcohol use, adverse alcohol effects on bone metabolism pose a serious health problem.

Studies with abstinent alcoholics have found that alcohol-induced changes in bone metabolism, including toxic effects on bone-forming cells, are at least partially reversible after cessation of drinking.

Alcohol , Brain and Behaviour

Effects of alcohol on the brain

Continued excessive alcohol use has adverse effects on the brain. The brain may be damaged directly by alcohol toxicity and indirectly through head injury after intoxication, nutritional deficits (such as thiamine or niacin deficiencies) and the toxic effects of alcohol on the liver.

Regular and heavy use of alcohol may also lead to alcohol dependence, especially in those susceptible to it.

Alcohol Dependence

When does one cross the boundary between recreational alcohol use and dependence? Three main measures have been used to help draw this distinction.

Loss of Control

The focus here is on the degree of loss of control over alcohol. For example, a person may plan to have 1 or 2 mugs of beer after work, but he ends up having 5 or 6. Loss of control is also in evidence when a person makes repeated, but unsuccessful, attempts to cut down or stop. Loss of control is marked by compulsive thoughts and actions. Much of the day is spent either thinking about getting high again or recovering from a previous high.



Alcohol acts by knocking out and disabling the control centres in the brain !



Maladaptive Consequence

Irresistible urges to drink lead to increasing lack of control

A second measure of alcohol dependence is the presence of negative psychological, social, and medical consequences. Alcohol dependence is also associated with severe medical problems. People who continue to use alcohol despite adverse effects on their health, occupational or social functioning show symptoms of alcohol dependence.

Biological Adaptation

Dependence also results in the body's adaptation to alcohol and the consequences of such changes.

Physical dependence is shown by either tolerance or withdrawal. Tolerance is defined as a decrease in the response to alcohol as use continues over time. Thus, it takes progressively larger amounts of alcohol to produce the same effect as earlier. Chronic alcohol users may also experience withdrawal symptoms such as rapid heart rates or excessive sweating when they stop or decrease alcohol drinking. People who show either physical tolerance or symptoms of withdrawal are said to be dependent on the drug.

" First the man takes a drink, then the drink takes a drink, then the drink takes the man" - Chinese Proverb

Alcohol Withdrawal Syndromes

Simple Withdrawal

This occurs following abrupt cessation or significant reduction of alcohol. It typically occurs after six hours after the last use and subsides in about one week. It is characterised by coarse tremors of hands, tongue or eyelids later followed by nausea/ vomiting; malaise/ weakness; autonomic hyperactivity (tachycardia, sweating, elevated B.P); anxiety; depressed/ irritable mood; headache and insomnia. Insomnia and irritability may persist upto six months after abstinence.

Alcoholic hallucinosis

This occurs in 25% of withdrawals. The syndrome consists of persistent hallucinations which develop within 48 hours of stopping or decreasing alcohol intake. It may even start while the patient is continuing to drink. Auditory hallucinations predominate: usually consisting of voices—reproachful, threatening, and maligning; or unstructured hallucinations— low hum, chant, buzz, ring, shots or clicks. These may continue intermittently and unceasingly for 6 - 10 days.

Alcohol related seizures

In a study done at NIMHANS, 15% of all patients admitted for alcohol detoxification had a history of seizures. Seizures may occur as a direct toxic effect of alcohol, due to indirect causes such as trauma or infection or due to alcohol withdrawal. Alcohol withdrawal seizures are classically described as seizures following sudden stopping or abrupt reduction in alcohol. They are generalized tonic clonic in nature, mostly occurring within 6-48 hours of last drink, usually peaking at 12-24 hours. About 3% of patients may go on to develop status epilepticus and in about 30% seizures precede Delirium Tremens. Typical withdrawal seizures may occur in clusters of 1 - 6. Focal seizures are

a typical. However recent research, including that done at NIMHANS suggests that many of the seizures that occur in alcoholics occur during intoxication or do not meet the criteria for withdrawal . Therefore it is important to carefully assess the patient presenting with alcoholism and seizures.

The person experiences withdrawal symptoms such as rapid heart rates or excessive sweating when he stops or decreases alcohol



Drinking becomes a means of relieving discomfort rather than a means of pleasure



Despite good intentions, multiple attempts to stop or cut down, the person quickly relapses to previous levels of drinking

Alcohol Dependence

A pattern of alcohol use characterised by:

- Compulsion to use
- Loss of control (of use onset, termination, or level of use)
- Withdrawal symptoms on use reduction or cessation
- Tolerance
- Neglect of alternative pleasures or interests
- Persistent use despite the knowledge of physical or psychological harm

Seizures with focal onset, seizures outside the 'withdrawal' period, antecedent head trauma, seizures preceding alcohol use must be appropriately recognised and treated. EEG and CT/MRI may be indicated in such situations

Delirium tremens

This is a complicated disorder associated with withdrawal involving sudden and severe mental changes (psychosis) or neurologic changes (including seizures) caused by sudden stopping or marked reduction in the use of alcohol.

One in ten alcoholics in withdrawal may develop delirium tremens. It is characterized by tachycardia, profuse sweating, dilated pupils, flushing, nausea/ vomiting, confusion, disorientation and altered sensorium, visual and auditory hallucinations, disorganized thinking, agitation, delusions, tremors, sleeplessness. Additional symptoms that may occur include fever, stomach pain and chest pain.

It peaks in 2-3 days after stopping or reducing alcohol. It may appear after recovery from other withdrawal symptoms (hallucinations, seizures). Symptoms usually resolve in 3-5 days but may be fatal in 5%. Most cases are benign and short lived but can recur with varying severity between intervals of complete lucidity over several days to weeks.

Risks include an alcoholic binge period where alcohol use is heavy and intake of food is inadequate. It may also be triggered by head injury, infection, or illness in people with a history of heavy use of alcohol. It is most common in people who have a history of repeated alcohol withdrawal states, especially in those drinking more than 10 units per day for several months, and in those with a history of habitual alcohol use or alcoholism for more than 10 years.

Delirium tremens is a medical emergency.

The patient may show increased startle reflex, rapid rhythmic muscle tremor, or other changes indicating alcohol withdrawal. Evidence of increased autonomic function such as profuse sweating or fluctuating blood pressure may be present. There may be symptoms of dehydration or malnutrition and signs indicating electrolyte disturbances. Abnormalities of eye muscle movement such as lid lag should be looked for. The heart rate may be rapid and there may be an irregular heart beat.

Electrolyte disturbances, especially decreased levels of sodium, potassium and magnesium are common. An electrocardiogram may show arrhythmias. An EEG (electroencephalogram) may be required to rule out other causes of seizures.

Alcoholic Cerebellar Degeneration

This predominantly affects the stance and the gait, which is wide-based. Legs are involved more severely than the arms.

Slurring of speech, finger nose incoordination, nystagmus are other features. Abstinence, dietary replenishment, and Vitamin B complex supplements may produce moderate improvement in the gait ataxia.

Alcohol withdrawal

- Feeling jumpy or nervous
- Feeling shaky
- Anxiety
- Irritability or easily excited
- Emotional volatility, rapid emotional changes
- Depression
- Fatigue
- Difficulty thinking clearly
- Palpitations (sensation of feeling the heart beat)
- Restlessness
- Increased activity
- Headache, general, pulsating sweating, especially the palms of the hands or the face
- Nausea, vomiting, loss of appetite
- Insomnia
- Mental status changes including rapid mood changes
- Decreased attention span
- Excitement

Alcohol related seizures may occur due to

- Withdrawal
- Intoxication
- Hypoglycemia
- Subdural haematoma
- Neuroinfection
- Cortical lesions
- Precipitation of epilepsy by reduction of seizure threshold by alcohol

Delirium Tremens – Common Features

- Fear, agitation, irritability
- Confusion, disorientation
- Marked tremulousness
- Hallucinations, visual hallucinations (snakes, spiders, etc.) most common
- Sensory hyperacuity (highly sensitive to light, sound, touch, etc.)
- Delirium (severe, acute loss of mental functions)
- Decreased mental status
- Stuporous, somnolent, lethargic
- Seizures : usually generalized tonic-clonic most common in first 24 - 48 hours ; most common in people with previous alcohol withdrawal complications
- Other features of alcohol withdrawal may also be present

Alcohol and Cognition

Alcohol adversely affects cognitive functions, such as impaired memory or reasoning ability. When treating patients who have abused alcohol, it is important to identify the level of any impairment and to modify the treatment accordingly.

Serious organic cerebral impairment is a common complication in severe alcoholics, occurring in about 10 percent of patients. Two main organic disorders have been described with sudden cessation of alcohol consumption: alcohol amnestic disorder (memory disorder) and dementia associated with alcoholism. Recently however, it has been recognized that these two disorders are not mutually exclusive and that some features of each often coexist in the same patient.

Wernicke-Korsakoff syndrome (Alcohol related amnestic disorder)

A brain disorder involving loss of specific brain functions, due to thiamine deficiency. The syndrome is actually two disorders that may occur independently or together.

Wernicke's encephalopathy involves damage to multiple nerves in both the central nervous system and the peripheral nervous system. It may also include symptoms caused by alcohol withdrawal.

It is characterized by 1] mental disturbance (Confusion, apathy, drowsiness leading to stupor, coma ; 2] acute or subacute ophthalmoplegia (nystagmus, lateral rectus and conjugate gaze palsy); and 3] gait ataxia.

Korsakoff's syndrome is characterized by defects in recent memory and in new learning. Confabulation (fabrication) where the person makes up detailed, believable stories about experiences or situations to cover the gaps in the memory may be present. Insight is limited and there is apathy to persons/ events.

Thiamine begins improvement in ocular movements in hours to days but complete recovery may take several weeks.

Recovery of ataxia takes longer, and is rarely complete. The apathy, confusion and cognitive deficits may persist for several weeks.

The Wernicke-Korsakoff's Syndrome is a medical emergency and without treatment, may be fatal. With treatment, symptoms such as incoordination and vision difficulties may be controlled, and progression of the disorder may be slowed or stopped. Some of the symptoms, particularly the loss of memory and intellect/cognitive skills, may be permanent.



The anterior lobe of the cerebellar vermis, showing the typical narrowing of folia and widening of sulci seen in gross cerebellar atrophy

Alcohol related cognitive deficits may be:

- A direct consequence of alcohol consumption
- Indirect, due to complications such as head injury, nutritional deficiencies, hepatic encephalopathy



Atrophy of mammillary bodies is found as part of Wernicke's encephalopathy

Alcoholic Neuropathy:

Alcoholic neuropathy may be caused by the toxic effect of alcohol on nerve tissue. It is usually also associated with nutritional deficiencies and may be indistinguishable from nutritional-related neuropathies such as beriberi. It can affect autonomic nerves (those that regulate internal body functions) and nerves that control movement and sensation. Habitual alcohol use, prolonged heavy use of alcohol, or alcoholism that is present for 10 years or more indicate high risk for alcoholic neuropathy.

Alcoholic patients have a high incidence of peripheral-nerve disorders, which are predominantly poly-neuropathies(involving sensory, motor, and autonomic nerves), but may also be mononeuropathies due to pressure palsy. Alcoholic polyneuropathy is generally thought to result from inadequate nutrition, and specifically from a deficiency of thiamine and other B vitamins.

Alcoholic polyneuropathy is a gradually progressive disorder. The clinical abnormalities are usually symmetrical and predominantly distal. Symptoms include numbness, paresthesia, burning sensation, pain, weakness, muscle cramps, and gait ataxia. The most common neurologic signs are the loss of tendon reflexes, the defective perception of touch and vibration sensation, and weakness. Autonomic disturbances (including orthostatic hypotension) are less common; when present, they may be associated with increased mortality.

Laboratory tests may be performed as indicated by the history, signs, and symptoms to rule out other possible causes of neuropathy.

Damage to nerves from alcoholic neuropathy is usually permanent and may be progressive if use of alcohol is not stopped. Symptoms vary from mild discomfort to severe disability. The disorder is usually not life threatening, but may severely compromise the quality of life.

Complications include disability, discomfort or pain and chronic injury to extremities.

Hepatic encephalopathy (portal- systemic encephalopathy)

Long-term alcohol consumption can also damage the brain through indirect effects. By damaging the liver (hepatitis), alcohol impairs the deactivation of many of the toxins that are found in the normal diet. Toxic compounds such as ammonia that would otherwise be deactivated by the liver are released into the bloodstream. When they reach the brain, the high concentrations of ammonia and other chemicals cause gradual

Wernicke-Korsakoff's Syndrome:

Eye changes

- double vision
- impaired eye movements
- eyelid drooping

Loss of muscle coordination (Ataxia)

- unsteady, uncoordinated walking
- weakness
- hand tremor

Sensation changes

- decreased sensation in the feet or hands, numbness
- abnormal sensations, tingling
- thin, malnourished appearance
- loss of hair, dry skin
- Swallowing difficulty

Profound loss of memory

- recent events, new learning
- confabulation
- decreased intellect/cognitive skills

Autonomic disturbances

- orthostatic dizziness
- constipation

Behavioural and Mood Changes

Assessments for alcoholic neuropathy

- Nutritional studies (for deficiencies of Vitamins B1, B6, B12, pantothenic acid, biotin, folic acid, niacin, vitamin A)
- Nerve conduction studies and EMG

In certain cases the following may be indicated:

- Nerve biopsy
- Oesophagogastroduodenoscopy
- Cystourethrogram

Neuropsychiatric symptoms related to alcohol

Complaints	Due to
Tremors of the hand	Withdrawal
Sweating	Hypoglycemia
Headache	Stroke
Fits	Encephalopathy
Disturbed sleep	Depression
Poor concentration	
Confusion	Wernicke Korsakoff's Syndrome
Anxiety /Depression	Dementia
Memory problems	
Burning feet or pins and needles	Neuromyopathy
Altered consciousness	Alcohol overdose
Hallucinations and delusions	Delirium
	Subdural haematoma
	Acute Psychosis

psychological changes and mental confusion. If this condition continues, the person will become uncoordinated, incontinent, and may develop tremors (characteristically flapping “bat – wing” tremors) and abnormal eye movements. Without treatment, the person will go into a coma, and die.

Alcohol and specific Psychiatric illness

Patients with depression, anxiety, and psychotic disorders tend to use alcohol for relief of mood, anxiety or fear. Alcohol is actually a depressant of the central nervous system. It tends to worsen such disorders in the long run, and the affected person is left, not only with the original mental problem, but additional alcohol related problems as well.

Depression

Depression is commonly found among people who drink heavily. Depression may occur in drinkers due to several reasons:

- As a reaction to alcohol related physical, psychological and social problems
- As an independent depressive disorder. Here the patient may self medicate by drinking
- As a transient phenomenon during alcohol withdrawal. This spontaneously remits in most cases. However it is important to recognize this as a possible trigger for relapse

Suicide

Suicide attempts and completed suicides occur much more commonly in heavy drinkers. In a study of the causes of suicide in Bangalore (1999), it was observed that out of 2600 completed suicides, 14% of all males who completed suicide and 1% females, had heavy alcohol use as a likely trigger or predisposing condition. 24% of all attempted suicides [1500 subjects attempted but did not complete] were similarly alcohol related.

Anxiety

Studies indicate that approximately 10 to 30 percent of alcoholics have panic disorder, and about 20 percent of persons with anxiety disorders abuse alcohol. Among alcoholics entering treatment, about two-thirds have symptoms that resemble anxiety disorders. Anxious patients may use alcohol or other drugs to self-medicate, despite the fact that such use may ultimately worsen their clinical condition.

Phobic Disorders

Persons with phobic disorders, especially social phobia often use alcohol to decrease their anxiety. This group of patients is vulnerable to develop alcoholism.

Alcohol and Other drug abuse

The heaviest alcohol consumers are also the heaviest consumers of tobacco. Concurrent use of these drugs poses a significant public health problem. Smoking and excessive alcohol use are risk factors for cardiovascular and lung diseases and for some forms of cancer. The risks of cancer of the mouth, throat, or oesophagus for the smoking drinker are more than the sum of the risks posed by these drugs individually. Compared with the risk for nonsmoking nondrinkers, the approximate relative risks for developing mouth and throat cancer are 7 times greater for those who use tobacco, 6 times greater for those who use alcohol, and 38 times greater for those who use both tobacco and alcohol. Persons liable to addiction to other drugs such as opioids, cannabis, tranquilisers etc are also likely to use alcohol along with these drugs.

Alcohol and Women

In India, until recently, women were projected only as the victims of male alcoholism, or as powerful agents of community change, initiating mass movements against alcohol sales and consumption. However more recently, alcohol use among women is on the increase. Admission of women with alcohol related problems at NIMHANS has increased four to five fold over a decade.

The Effect of Alcohol on Women

Many adverse effects of alcohol are common to men and women. In some cases, women may be at greater risk and there are some problems special to women. In contrast to men who are drinking, women:

- Have greater physical problems at lower levels of alcohol consumption
- Report fewer social problems
- Attain higher blood levels with the same amount of alcohol
- Suffer greater liver damage including cirrhosis and hepatitis with a shorter period and a lower level of daily drinking

In addition heavy alcohol use has been attributed as a cause of infertility. Moderate alcohol consumption may contribute to the risk of specific types of infertility.

Breast Cancer

Many studies have found that alcohol is associated with a raised risk of breast cancer. While it has not yet been proved conclusively that alcohol directly causes breast cancer, until the association can be explained in other ways, alcohol should be regarded as a predisposing factor.

Alcohol and Pregnancy

Alcohol is directly toxic to the fetus and causes birth defects. Women who consume two or more drinks per week while pregnant have a higher risk of spontaneous abortion. Most spontaneous abortions occur during the second trimester. While one or two drinks during an entire pregnancy might not have any noticeable effect, the poisonous effects of many drinks can add up, leading to a spontaneous abortion.

Drinking while pregnant also increases the risk of stillbirth. Stillbirths can occur after heavy drinking in the last three months of pregnancy. Drinking alcohol at this stage of pregnancy lessens the amount of oxygen delivered to the developing child. This leads to fetal death and thus, stillbirth.

Alcohol and Birth Defects

Alcohol is known to cause birth defects. The effects of drinking on fetal development are so widely recognized that the phrase "Fetal Alcohol Syndrome" is used to describe these symptoms in children. The severity and number of defects in Fetal Alcohol Syndrome depends on the amount of alcohol consumed by the mother and the stage of pregnancy in which drinking occurs. Low infant birth weight is seen with as little as two drinks per day. Full Fetal Alcohol Syndrome may be caused by four to five drinks per day. Alcohol consumption harms the fetus at all stages of the pregnancy: there is no safe time during pregnancy for a woman to drink alcohol.

Victimisation

Women may be particularly likely to be the victims of another person's drinking. Alcohol is thought to be a risk factor in the victimisation of women and it is known that women are the victims in a large proportion of violent crimes.

Fetal Alcohol Syndrome

- Poor co-ordination and clumsiness
- Low muscle tone
- Irritability
- Jitteriness
- Hyperactivity
- Poor attention
- Skull bone and facial abnormalities (lip deformity, flattened upturned nose, thin upper lip, short palpebral fissure)
- Major organ abnormalities in severe cases
- Subnormal intelligence



Psychosocial Problems associated with Alcoholism

Family: Economic hardship

Quarrels

Violence

Stigma

Spouse:

Physical abuse

Emotional problems, especially depression

Children:

School refusal

Conduct problems

Emotional problems

Alcohol use (by modeling)

Alcohol has also been linked to the incidence of sexual assault and rape with some studies estimating that more than 50 per cent of men convicted of these offences had been using alcohol prior to the attack. Equally, high proportions of victims of violence, including sexual assaults, are themselves under the influence of alcohol at the time of the offence.

Alcohol and psychosocial problems

The psychosocial problems with alcoholism are well known. Arguments, physical violence, social stigma for the family, financial difficulties, emotional problems in the spouse and children are well known. A history of alcohol use in the husband should be ascertained when a woman presents with unexplained injuries, emotional disturbances, especially vague somatic symptoms, depression or attempted suicide. Parental alcoholism should be enquired about when children present with school refusal, behavioural or emotional problems



Summary

Alcohol can adversely effect every organ in the body:

1. Heart burn, nausea and gastritis is an early adverse symptom of drinking. This is usually the first symptom that brings the patient to the physician. Intervention at this stage may prevent the patient progressing to more severe drink related problems
2. The liver is a favourite target in chronic drinkers- alcohol can cause fatty liver, alcoholic hepatitis and in end-stage drinkers, cirrhosis. Early stages of liver disease can be reversed with abstinence and good nutrition. Even social drinkers can get alcoholic hepatitis
3. Alcohol has 'empty calories'. Chronic alcohol use leads to malabsorption syndromes. Alcohol users frequently present with malnutrition. Deficiencies of thiamine (VitaminB1), Niacin (B2), Pyridoxine (B6), B12 and Folate can occur.
4. Alcoholic pancreatitis is a very distressing, often recurring condition, associated with many other complications.
5. Alcohol impairs blood sugar regulation. Both hyperglycemia and hypoglycemia can occur in drinkers. Control of blood sugar by antidiabetic medication is also impaired in the presence of alcohol. Alcohol worsens complications of diabetes.
6. Cardiovascular effects of drinking include poor blood pressure control, increased risk for cerebral haemorrhage and strokes, cardiac enlargement and failure and arrhythmias.
7. Anaemia as well as reduction in other cell counts may occur in chronic drinkers.
8. Alcohol reduces immunity and increases likelihood of infections.
9. Drinkers have a higher prevalence of HIV infection than non drinkers(risk of unprotected high risk sex and lowered immunity)
10. Alcohol can damage the musculoskeletal system
11. Drinking reduces sexual capacity in the long run
12. Alcohol impairs sleep and memory.
13. Alcohol increases the risk of seizures
14. Nerve damage, particularly polyneuropathy is common in chronic drinkers
15. A proportion of people who begin as moderate drinkers go on to develop addiction or dependence.
16. Alcohol withdrawal produces unpleasant physical and psychological symptoms. Serious complications include Delirium Tremens, Wernicke Korsakoff's Syndrome and hallucinosis
17. Depression, anxiety, suicide, and other psychiatric symptoms are more likely in drinkers.
18. Drinking destroys the family and work long before it destroys the liver.
19. Women are much more vulnerable to effects of alcohol compared to men. They also present with much greater complications with lesser drinking.
20. Most drinkers smoke and have the additional health problems associated with smoking.
21. Persons abusing other drugs also tend to abuse alcohol

5. Managing Alcohol related problems in Clinical practice

Screening and Assessment for alcohol abuse

Alcohol misuse is a great mimic of disease. Its widespread symptoms are complicated by the reluctance of many patients, relatives and doctors to accept that there is a problem.

The usual medical approach is to look for gross signs of disease of the liver, heart, brain and other organs. This approach is not only deceptive but also unhelpful. This is because of the fact that by the time these are present the disease is frequently irreversible.

The few people who are referred to the doctor about their drinking habits or with advanced signs of hepatomegaly or abnormal liver functions actually form the minority. Most people who turn out to be problem drinkers often have non – specific symptoms which are often vague, multiple and do not fit readily into any diagnostic pattern.

Currently, general practitioners identify only a minority of their patients with drinking problems. The clues are often non specific. Doctors need to think of alcohol every time they meet a clue, and then check for others by asking about details of consumption of alcohol, looking for physical, psychological or social problems; checking with significant family members and testing for pathological markers.

When is screening for alcohol problems appropriate?

- as part of a routine health examination
- before prescribing a medication that interacts with alcohol
- in response to presenting problems that may be alcohol-related

Detection and Intervention

The ASK, ASSESS, ADVISE, MONITOR approach

- Step I. ASK about alcohol use.
- Step II. ASSESS for alcohol-related problems.
- Step III. ADVISE appropriate action (set a drinking goal, advise to abstain, or obtain alcohol treatment).
- Step IV. MONITOR patient progress.

CLUES

The index of suspicion should be high that alcohol contributes to the following :

1. Repeated attendance or admissions for relatively minor complaints which cannot be clearly labelled
2. Fits for the first time in middle age
3. Mild diabetic symptoms or glycosuria in the young or middle aged
4. Essential hypertension, failure to control blood pressure with multiple drugs
5. Atypical cardiac symptoms, arrhythmias or cardiac failure in middle aged men
6. Attacks of confusion, especially in strange surroundings or after stress (illness, operation, bereavement etc.) and in the elderly
7. Sleep disturbances, anxiety, depression
8. Gastrointestinal symptoms where a cause cannot be established; Nausea, morning retching, vomiting, anorexia; Gastritis and non specific acid – peptic symptoms
9. Symptoms of gastroesophageal reflux
10. Recurrent diarrhoea
11. Hepatomegaly for which no other cause can be found
12. Anemia, especially folate deficiency type
13. Lobar pneumonia; atypical pneumonia
14. Atypical endocrine features mimicking Cushing's disease, thyrotoxicosis, phaeochromocytoma etc.
15. Falls in the elderly
16. Gout, whatever the immediate precipitating cause
17. Drug overdoses
18. Complaints of increased upheaval in relationships
19. Motor vehicle violations / accidents
20. Absenteeism from work
21. Trouble keeping appointments at work or with friends to the point of losing jobs, friends, and even family support
22. Injuries from trauma
23. Memory disturbances

The list is so big that it is probably more useful to routinely ask for a history of alcohol consumption and patterns, smoking, as well as other drug use in all patients. Such a practice as part of a routine medical history will also help to reduce stigma in reporting substance abuse.

Ask

The most effective tool for diagnosing alcohol-related problems is a thorough history of the drinking behavior and its consequences.

The alcohol questions can be part of a Life - Style Risk Assessment, which touches on smoking, exercise and stress. This has been shown to be acceptable to patients.

In All patients

Do you use alcohol ?

In Current drinkers

1. *Frequency : How often do you drink ?*
2. *Quantity: How much do you usually drink on one occasion ?*
[This is best calculated as standard drinks. This was discussed earlier]
3. *Heaviest use: What is the maximum number of drinks you had on any given occasion during the past month ?*
(This question may help to identify a person who has had difficulty in controlling his drinking or has had serious problems with alcohol)
4. *Family history of alcoholism: Does anyone in your family have problems with alcohol use ?*
5. *High risk behaviour - Repeated intoxication, drinking and driving etc*

Helpful Hints

1. Be as matter of fact as possible. Show interest but not surprise or overconcern about the amount or pattern of use. Avoid terms like 'alcoholic' ('Kuduka', 'Kudigara', 'Bewda'). Be aware that some patients may be defensive about drinking. Patients with drinking problems may spontaneously deny use of alcohol or question the relevance of discussing alcohol use!
2. Ask patient to be explicit about alcohol use. Do not accept answers like 'just occasionally' 'only on weekends', or 'only after work'. Ask 'How often is occasionally?', 'How much at weekends?', or 'What do you mean by one drink?'

Assess

In a patient who reports regular drinking (more than twice a week during the last six months), assess for associated problems:

- Physical: either preceding or following alcohol use
- Psychological : Especially anxiety, depression, difficulty in handling stress
- Social: complaint or criticism from family about his drinking
- Occupational: Monday morning blues, going late to work, absenteeism, accidents, interpersonal difficulties, more serious problems including memos, termination.
- Legal: Arrests for drunken driving or for getting into fights and brawls.

Screening questionnaires

A wide variety of instruments have been developed to screen for alcoholism. In the general hospital situation an effective screening instrument would require to be both brief as well as sensitive.

These include the CAGE questionnaire, the MAST (The Michigan Alcohol Screening Test) and the AUDIT.

The MAST was one of the first alcohol screening tests to be developed. It includes 25 questions assessing the consequences of alcohol use but it does not discriminate between current and past disorders.

The AUDIT (Alcohol Use Disorders Identification Test) was developed as a screening instrument for hazardous and harmful alcohol consumption as part of a six country World Health Organization study of brief alcohol interventions. It measures alcohol consumption, drinking behavior, and alcohol related problems during the past year and thus emphasizes the detection of current disorders.

The 10 questions are scored on a scale of 0 to 4. A score of 8 or more is the cut-off for problem drinking.

Don't assume that it is not necessary to ask for a history of drinking from women. In some sections of society, women drink frequently. Assumptions about drinking cannot be accurately made from appearance or status. Ask the same questions. If there is any hesitation in discussing the drinking, its antecedents and consequences, explain your reasons for asking and assure confidentiality

AUDIT

1. How often do you have a drink containing alcohol?

Never	Monthly 2-4 times or less	2 – 3 times a month	a week	4 or more times a week
0	1	2	3	4

2. How many drinks containing alcohol do you have on a typical day when you are drinking?

1 – 2	3 – 4	5 – 6	7 – 9	> 10
0	1	2	3	4

3. How often do you have six or more drinks on one occasion?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
0	1	2	3	4

4. How often during the last year have you found that you were not able to stop drinking once you had started?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
0	1	2	3	4

5. How often during the last year have you failed to do what was normally expected from you because of drinking?

Never monthly	Less than	Monthly	Weekly	Daily or almost daily
0	1	2	3	4

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
0	1	2	3	4

7. How often during the last year have you had a feeling of guilt or remorse after drinking?

Never monthly	Less than	Monthly	Weekly	Daily or almost daily
0	1	2	3	4

8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
0	1	2	3	4

9. Have you or someone else been injured as a result of your drinking?

No	Yes, but not in the last year	Yes during the last year
0	2	4

10. Has a relative or friend, or a doctor or other health worker been concerned about your drinking or suggested you cut down?

No	Yes, but not in the last year	Yes during the last year
0	2	4

Laboratory Findings

Certain chemical markers are indicative but not diagnostic of alcohol-use disorders. Among liver function tests, the **gamma-glutamyl transferase (GGT)** level is usually the first to become elevated, followed by the **aspartate aminotransferase (AST)** or **SGOT** level, which is often twice the level of **alanine aminotransferase (ALT)** i.e **SGPT**.

The **complete blood cell count** may display a number of abnormalities. In cases of end-stage disease, all cell lines are reduced as a direct toxic effect of alcohol on the bone marrow. The **prothrombin time (PT)** is elevated because of decreased production of clotting factors by the liver. However, in early disease **mean corpuscular volume (MCV)** may be slightly elevated as a result of folate deficiency and the direct effects of alcohol on red blood cells. Patients with alcoholic gastritis may lose blood through the gastrointestinal tract, causing anemia and the production of smaller red blood cells, resulting in a low MCV. Blood loss in the gastrointestinal tract may also cause iron deficiency.

A wide variety of blood tests have been evaluated as potential markers of alcohol abuse and dependence. In general however, none of the laboratory tests are as sensitive or specific as questionnaire tests. Also they are more accurate for detecting alcohol dependence rather than abuse. It must also be remembered that there is no single test to screen for alcoholism. The laboratory tests evaluated most thoroughly are:

Parameter	Normal	Alcohol abuse or dependence	Comments
MCV (Mean corpuscular volume)	76-94 mm ³	Increased	Direct toxic effect of ethanol. Indirect alcohol induced megaloblastic changes (B12 and folate deficiency)
Gamma Glutamyl Transferase (GGT)	0-50 IU/L	Increased	Good indicator of recent heavy consumption or relapse. (Anticonvulsants, anticoagulants, oral contraceptive pills may give false positives by induction of microsomal enzymes). Other causes include nonalcoholic liver disease, hyperlipidemia, hyperthyroidism
Transaminases SGOT(AST) and SGPT(ALT)	0-40 IU/L	Increased	Liberated due to hepatocellular injury. Elevation is associated with severity of liver damage SGOT : SGPT - 2:1 is suggestive of alcoholic liver disease Ratio < 1 suggests nonalcoholic liver disease Ratio > 1 is suggestive of advanced chronic viral hepatitis
Alkaline phosphatase	35-130 IU/L	Increased	Less specific for liver dysfunction. The ratio of GGT : AP if > 1.4 is suggestive of alcoholic liver disease and if > 3.5 is diagnostic of alcoholic liver disease
High density lipoproteins (HDL)	35-70 mg/dl	Increased	Increased with moderate ethanol consumption (but has a high normal variation)

Note: Normal values vary across laboratories.

Assess problem severity

Patients who screen positive should be assessed to determine the nature and extent of their alcohol-related problems. Use the assessment procedures described below to determine problem severity, as follows:

(1) at increased risk for developing alcohol-related problems, (2) currently experiencing alcohol-related problems, or (3) may be alcohol dependent.

At risk for alcohol-related problems

Indicators	Assessment
<ul style="list-style-type: none">* Drinking above recommended low-risk consumption levels* Drinking in high-risk situations* Drinking on the background of personal or family history of alcohol-related problems	<ul style="list-style-type: none">* Ask about typical drinking patterns: <i>How long have you been drinking this amount?</i> <i>How many times in a week (or month) do you have four or more drinks on one occasion?</i> <i>What is the most you have consumed on one occasion during the past year?</i> <i>Have you ever driven a vehicle, or operated heavy machinery after having a drink ?</i>* Ask about personal and family history: <i>Have you or anyone in your immediate family ever had a drinking problem?</i>

For many conditions, there is a dose-response relationship between alcohol consumption and risk. This applies to cirrhosis of the liver; cancers of the oropharynx, larynx, liver, and breast; hypertension; and stroke.

Currently Experiencing Alcohol-Related Problems

Indicators	Assessment
<ul style="list-style-type: none">* one or two positive responses to the CAGE that have occurred in the past year* evidence of alcohol-related medical or behavioral problems	<ul style="list-style-type: none">* evidence of alcohol-related medical problems, such as: blackouts, chronic abdominal pain, depression, liver dysfunction, hypertension, sexual dysfunction, trauma , sleep disorders* Ask about interpersonal or work-related problems: <i>Has your drinking ever caused you problems, such as problems with your family, problems with your work (or school) performance, or accidents/injuries?</i>

May Be Alcohol Dependent

Indicators	Assessment
<ul style="list-style-type: none">* Three or four positive responses to the CAGE that have occurred in the past year OR* Evidence of one or more of the following symptoms: Compulsion to drink,preoccupation with drinking, Impaired control (unable to stop drinking once started) Relief drinking (drinking to avoid withdrawal symptoms) Withdrawal (evidence of tremor, nausea, sweats, or mood disturbance) Tolerance (takes more alcohol than before to get "high")	<p>Ask the following questions:</p> <ul style="list-style-type: none">— Are there times when you are unable to stop drinking once you have started?— Does it take more drinks than before to get "high"?— Do you feel a strong urge to drink?— Do you change your plans so that you can have a drink?— Do you ever drink in the morning to relieve shaking of hands or tension and anxiety ?

Note: Chronic heavy use of alcohol (i.e., three or more drinks per day) may be associated with elevations in serum gamma-glutamyltransferase (GGT). This can be an indicator of excessive drinking.

Assess Readiness to Change

Individuals are most likely to make behavior changes when they perceive that they have a problem and when they feel they can change. Some patients may not be ready to change when brief intervention begins, but may be ready when they experience an alcohol-related illness or injury. Because a patient's readiness to change

appears to be a significant predictor of changes in drinking behavior, it is important to assess patients' readiness to change when beginning a brief intervention.

Precontemplation (not ready for change) a refusal to acknowledge problems (eg. *'I don't have a problem; I'm looking after my family; I drink only in the evenings'*)

Contemplation (ambivalence about change) (eg. *'I can't bear the withdrawal symptoms; Can treatment really help me in my employment...' my drinking is affecting my family life !*)

Preparation (planning for change)(eg. *asking for help, approaching a friend who has given up drinking*)

Action (the act of change) (eg. *getting admitted, attending the outpatient clinic*) and

Maintenance (maintaining the new behavior) (effectively *handling peer pressure, handling negative emotions, handling craving, changing his behaviour and lifestyle*)

This model of change can be pictured as a continuum, with a person moving back and forth among the stages depending on the personal day-to-day costs and benefits of that behavior. Relapse is common and does not indicate a "failed" intervention.

Contemplation (ambivalence) is the most common stage of change which is often encountered. Even patients who do not admit to an alcohol problem (pre-contemplators) can change their behaviors. Personal decisions about lifestyle changes evolve slowly over time, requiring much reflection, with repeated attempts at change and repeated setbacks. Patients will not leap from the precontemplation stage into the action stage after one clinic visit, no matter how insightful or aggressive the practitioner. The goal of each visit should be to help the patient move along the continuum of change toward a reduction in alcohol use.

Advise

Advise Appropriate action (Set a drinking goal, advise to abstain, or obtain alcohol treatment)

FEEDBACK of Personal Risk

1. State your medical concern. Link the drinking to the presenting problem and recommend reduction or abstinence

Be specific about your patient's drinking patterns and related health risks. Relate the patient's presenting complaint or his condition to his drinking pattern. Clearly state how his drinking is likely to worsen his condition, hamper his improvement or interact with the medications he has been prescribed.

"Your drinking is going to worsen your stomach pain and also interfere with the effect of the medicines, so that your treatment will be less effective."

Say, *'I'm concerned that your drinking is contributing to your fatigue and sleeping problem' or 'it looks like your drinking is worsening your stomach bloating and frequent belching'*. Focusing on the consequences of drinking reduces the patient's defensiveness and avoids blaming the patient for drinking. However, just treating the underlying medical problem associated with alcohol abuse without first addressing the underlying drinking reinforces the person's denial. Saying the following may help to reinforce this link: *'Before doing further tests or giving you any medication, I'd like to see what happens after you've completely stopped drinking for two weeks', or 'I'm prescribing some medicines for symptomatic relief of your stomach pain but you will need to completely stop your drinking for some time if the condition has to heal. Why don't you give up for two weeks and see the difference it makes?'*

The physician should direct intervention efforts based on consideration of two important factors:

- The severity of the alcohol problem and drinking goal choice and
 - The patient's readiness to change the drinking behavior.
- In patients who have either :
- severe medical problems (eg. liver disease, uncontrolled hypertension or severe diabetes etc.,) or
 - been prescribed medications that interact adversely with alcohol
 - psychiatric disorders,
 - dependent patterns of use
 - history of abnormal behaviour while drinking
 - past failures of controlled drinking
 - strong family history of alcohol dependence
 - strong external pressures to abstain (threat of separation from spouse, risk of job loss)
 - physiological states like pregnancy,

the advice should be abstinence from alcohol and referral to a specialized alcohol treatment program.

2. Involve family members as part of assessment and intervention

Interviewing patients with family members (spouse) present usually provides more accurate information about the severity of drinking and associated problems. If there is a suspicion about significant alcohol abuse, the patient can be asked to return in a few days with a family member. If the family members do not themselves bring up alcohol as a problem, the doctor can present it as a contributing factor. *"One of the things that may be contributing to your husband's....."*

3. Present assessment as problem with drinking and not 'Alcoholism'

Many patients and their families will be willing to accept that they have physical problems due to excessive drinking, but deny or reject any suggestion that they have 'alcoholism' or are 'alcoholic'.

4. Educate patient and family about alcohol

Explain how drinking is related to the presenting problem and affects health in general. If there is a family history of alcohol abuse it is often helpful to discuss that alcohol abuse runs in families and close relatives run greater risks.

RESPONSIBILITY of the Patient.

Perceived personal control has been recognized to motivate behaviour change. Therefore, brief intervention commonly emphasizes the patient's responsibility and choice for reducing drinking. For example, telling the patient *"No one can make you change or make you decide to change. What you do about your drinking is up to you."*

MENU of Ways to Reduce Drinking

Providing a variety of strategies for the patient to choose from may be a useful intervention. These may include:

1. setting a specific limit on alcohol consumption
2. learning to recognize situations that encourage drinking and developing skills to avoid drinking in high-risk situations
3. planning ahead to limit drinking
4. pacing one's drinking (e.g. sipping, measuring, diluting, and spacing drinks)
5. learning to cope with the everyday problems that may lead to drinking

Providing patients, self-help materials may to help them carry out these strategies . Self-help materials often include drinking diaries to help patients monitor their abstinent days and the number of drinks consumed on drinking days, record instances when they are tempted to drink or experience social pressure to drink, and note the alternatives to drinking that they use .

When working with alcohol-dependent patients and patients with associated problems, abstinence, rather than reduced drinking, is the goal of brief intervention.

EMPATHETIC Counseling Style

A warm, reflective, and understanding style of delivering brief intervention is more effective than an aggressive, confrontational, or coercive style.

SELF-EFFICACY or Optimism of the Patient

Patients needs to be encouraged to rely on their own resources to bring about change and to be optimistic about their ability to change their drinking behavior. Brief intervention often includes motivation-enhancing techniques (e.g., eliciting and reinforcing self-motivating statements, such as *"I am worried about my drinking and want to cut back,"* and emphasizing the patient's strengths) to encourage patients to develop, implement, and commit to plans to stop drinking.

SOME PATIENT COUNSELING TIPS

- Use an empathic, non-confrontational style.
- Offer your patient some choices about how to effect change.
- Emphasize your patient's responsibility for changing drinking behavior.
- Convey confidence in your patient's ability to change drinking behavior.

Agree

Agree upon a plan of action

Talk with patients who are ready to make a change in their drinking about a specific plan of action. Try to get the patient to commit to a plan of action and encourage him to link the plan to his day to day routine. It is also advisable to involve significant relatives [spouse] in the plan.

For patients who are not alcohol dependent:

Recommend low-risk consumption limits for your patient based upon the low-risk drinking recommendations and your patient's health history

- Ask your patient to set a specific drinking goal: "Are you ready to set a drinking goal."
- Some patients choose to abstain for a period of time or for good; others prefer to limit the amount they drink.

The final choice of the drinking goal, (only in case the patient does not have a condition where abstinence must be advised) is best left to the person, as that has the best guarantee of success. The only indication for 'drinking in

moderation' seems to be if the person WANTS to drink (It is difficult to think of any situations when the person HAS to drink). In persons who have no established drink related problems, but run a risk, a low risk drinking limit may be negotiated. The physician needs to encourage the person to keep **in regular contact, be willing to renegotiate drinking goal choice in the future, in the event of loss of control or adverse consequences.**

What do you think will work best for you?

Provide patient education materials and tell your patient:

"It helps to think about your reasons for wanting to cut down and examine what situations trigger unhealthy drinking patterns. These materials will give you some useful tips on how to maintain your drinking goal".

For patients with evidence of alcohol dependence

Strongly recommend Abstinence as the only choice.

Advise treatment for alcohol dependence, including Detoxification. Refer to specialized Addiction Treatment Centres for additional diagnostic evaluation or treatment, if patient cannot be managed within the primary care setting.

Procedures for patient referral are as follows:

- Involve your patient and family in making referral decisions.
- Discuss available alcohol treatment services.
- Schedule a referral appointment while the patient is in the clinic or hospital.

Setting of treatment

Decisions about inpatient or outpatient treatment depend on the patient's likelihood of alcohol withdrawal, associated physical problems, resources, employment status, family support system, access to treatment programs and motivation. Patients who resist formal treatment may prefer self help groups, such as those offered by Alcoholics Anonymous, in conjunction with physician counseling and support. Al-Anon groups are available for adult family members of alcohol-dependent individuals currently in larger cities.

LOW-RISK DRINKING

Advise those patients who currently drink to drink in moderation. Moderate drinking is defined as follows:

Men—no more than 2 units per day

Women—no more than 1 unit per day

Over 65—no more than 1 unit per day

Never more than 4 drinks per drinking occasion [3 for women and those over 65 years]

No drinking for at least three days in the week

Reminder: A standard drink is 10 grams of pure alcohol, which is equal to one mug or half a bottle of light beer or 30 ml (one small peg) of distilled spirits.

Heavier episodic drinking (more than four drinks per occasion by men, more than three drinks per occasion by women) impairs cognitive and psychomotor functions and increases the risk of alcohol-related problems, including accidents and injuries.

Monitor

Monitor Patient Progress

Patient progress is monitored in the same way as other chronic medical problems, such as hypertension or diabetes. It needs to be recognized that behavior change is a gradual process.

1. Ask about alcohol use and reinforce abstinence: If the patient had initially talked of reduced drinking and the feedback suggests a loss of control, advise abstinence. If he has abstained, reinforce his effort and motivation.
2. Continue to link the patient's presenting problem to alcohol: At the follow-up visits if the patient has been unable to abstain, stress again about his illness being caused by or complicated by alcohol use and advise again to reduce or stop alcohol consumption.

Consider referring patients who need counseling or specialized interventions to specialized addiction services.

Effectiveness of Brief Intervention

For non-alcohol-dependent patients. Many studies suggest that brief intervention can help non-alcohol-dependent patients reduce their drinking. It has even been suggested that the assessment of drinking behavior and related problems may, in itself, lead motivated patients to alter their drinking behavior.

For Alcohol-Dependent Patients. Other studies have examined the effectiveness of brief intervention for motivating alcohol-dependent patients to enter long-term alcohol treatment. Among alcoholics identified in an emergency care setting, 65 percent of those receiving brief counseling kept a subsequent appointment for specialized treatment, compared with 5 percent of those who did not receive counseling. Some studies conducted among alcohol-dependent patients have found that brief intervention is as effective as more extensive treatment approaches used in specialized alcohol treatment settings. However, patients with more severe problems were more likely to report improvement if they received intensive treatment .

Variations of brief intervention have been found effective for helping non-alcohol-dependent patients reduce or stop drinking, for motivating alcohol-dependent patients to enter long-term alcohol treatment, and for treating some alcohol-dependent patients. It is an especially attractive option, because it can be used in primary care settings with minimum disruption to clinical routine and patient care. However, the evidence of its effectiveness and low cost may lead to the conclusion that it is always possible to substitute brief intervention for more specialized care. This would be a mistake.

Patients Who Are Not Ready To Change Their Drinking Behavior

Do not be discouraged if patients are not ready to take action immediately. Decisions to change behavior often involve fluctuating motivation and feelings of ambivalence. By offering your advice, you have prompted your patients to think more seriously about their drinking behavior. In many cases, continued reinforcement is the key to a patient's decision to take action. Offer the following guidance to patients who are not ready to take action:

- Restate your concern for your patient's health.
- Reinforce your willingness to help when the patient is ready.
- Continue to monitor alcohol use at subsequent follow-up visits.

For patients who may be alcohol dependent, you may want to consider some additional strategies:

- Encourage your patient to consult an alcohol specialist or a specialised treatment centre
- Ask your patient to discuss your recommendation with family members and schedule a follow-up visit that includes family members/significant others.
- Recommend a trial period of abstinence, monitor for withdrawal symptoms, and review progress in a follow-up visit.

Summary

- Common symptoms with which patients come to the primary care physician may often be alcohol related
- **ASK:** Every patient should be asked for quantity and frequency of alcohol use and patterns of use. High risk behaviours while drinking and family history of alcoholism need to be enquired. Physical, psychological, social, occupational and legal consequences of drinking should be determined
- **ASSESS:** Patients who drink should be assessed for problem severity- whether they are at risk to develop subsequent problems, whether their drinking has worsened current medical problems or whether their drinking amounts to alcohol dependence

CAGE and AUDIT are two instruments which can be used for rapid screening. Biochemical tests help to substantiate clinical findings
- **ADVISE:** The physician should state his medical concern, link the patient's drinking to the present problem and strongly recommend reduction or abstinence
- **AGREE:** The patient and physician should agree on a concrete plan of action
- **MONITORING:** Follow-up of patient progress is essential

6. Management of late stage alcohol related problems

MANAGEMENT OF LATE STAGE ALCOHOL RELATED PROBLEMS

Alcoholism enjoys a good recovery rate once the alcoholic stops drinking. Treatment takes many forms because there are many kinds of alcoholics, each with special needs. Treatment sources include hospitals, alcoholism units within hospitals, private clinics designed solely for the care of alcoholics, residential alcoholic rehabilitation facilities, self-help groups such as Alcoholics Anonymous, and private practitioners such as alcoholism counselors, psychologists, psychiatric social workers, and psychiatrists.

Setting for Intervention

Most patients can be safely detoxified and treated for their withdrawal symptoms in a domiciliary setting. Only a minority of patients with severe withdrawal or complicating medical illness require in-patient care.

General Principles in Treatment of Withdrawal

- * Careful monitoring and supportive care
- * Ample fluids by mouth (ensure patient is conscious and alert to avoid risk of aspiration)
- * IV fluids if significantly dehydrated
- * Correct electrolyte imbalance
- * Parenteral thiamine
- * Avoid physical restraint as patient may fight restraint to the point of exhaustion. Sedate. Seclude in a quiet environment if necessary
- * Warm verbal support very important
- * Medically debilitated patients recover more slowly
- * Duration of medical stay may be determined by severity of dependency and health status
- * Restrict access to addicting substances
- * Educate and motivate about treatment
- * Involve significant others in the treatment from the initial stages

Liaise with specialists as appropriate (eg. for cardiac, surgical, neurological, psychiatric problems)

Relative Indications for outpatient detoxification	Relative indications for inpatient care
<ul style="list-style-type: none"> * Mild to moderate withdrawal symptoms * No medical or neurological illness * No infection * Psychiatrically stable * No history of seizures or delirium tremens * Reliable family support * Easy access to treatment center or hospital * Willing to come for review 	<ul style="list-style-type: none"> * Severe withdrawal symptoms in the past-doubles risk for withdrawal seizures * Severe dependency on alcohol * Medical or surgical condition requiring treatment * Hepatic decompensation * Infection * Dehydration, sugar and electrolyte imbalance * Malnutrition * Cardiac problems (arrhythmias, severe hypertension, cardiovascular collapse) * Trauma, especially head injury * Hallucinations * Delirium tremens * Wernicke's encephalopathy * Social isolation * Severe craving

Detoxification

Withdrawal from alcohol typically begins 6 to 8 hours following a reduction in alcohol use, peaks 24 to 48 hours after the last drink and can last up to 7 days. Detoxification consists of a group of procedures from sobering up acutely intoxicated patients to management of severe withdrawal syndromes.

Detoxification helps to:

1. prevent march of early withdrawal symptoms to life threatening complications.
2. relieve withdrawal symptoms
3. Provide an opportunity to explore, assess and initiate modification of medical, social, psychiatric and life style problems

A majority of patients can be dealt with on an outpatient basis. Mild withdrawal can be handled with reassurance as the symptoms are temporary and disappear quickly (social detoxification). However moderate and severe withdrawal is best treated with medication both to decrease the patient's discomfort and to protect against possible neurotoxicity resulting from abrupt withdrawal of alcohol from the brain.

Goals Of Pharmacotherapy For Alcohol Withdrawal

Goals for which substantial evidence of effectiveness exists:

- Treatment of alcohol withdrawal symptoms
- Prevention of initial and recurrent seizures
- Prevention and treatment of delirium tremens

Other goals:

- Prevention of medical and psychiatric complications of alcohol withdrawal
- Prevention of "kindling" effect ("Kindling" refers to the phenomenon whereby repeated insults to the brain, example by severe and frequent withdrawal, the threshold gets reduced for developing subsequent problems eg DT)
- Prevention of Wernicke- Korsakoff's psychosis
- Improvement in the likelihood of abstinence
- Minimization of adverse drug effects
- Entry into ongoing medical and addiction treatment

Benzodiazepines are the most commonly use drugs for detoxification.

Pharmacotherapy for alcohol withdrawal		
Agent	Advantages	Disadvantages
Benzodiazepines Long Acting (Diazepam, Chlordiazepoxide) Shorter Acting (Lorazepam, Oxazepam)	Widely used Smoother and rapid onset of effect, Prolonged action, more effect on anxiety and depression than shorter acting benzodiazepines Less risk of oversedation Safer in liver disease Better absorption IM	Abuse potential Erratic IM absorption Less safe in patients with liver disease, confusion, sedation Increased risk of seizures Higher likelihood of dependence
Anticonvulsants (Carbamazepine, Phenytoin)	No abuse liability Anticonvulsant activity	Liver side effects Haematological problems
Adrenergic Agents Alpha adrenergic agents Beta Blockers	No abuse liability No respiratory depression Protection against arrhythmia Less sedating	No anticonvulsant activity Hypotension Can cause delirium Medical contraindications
Calcium Channel Blockers		No wide experience

Both long acting and shorter acting benzodiazepines have been used and are equally effective. However longer acting benzodiazepines like Diazepam or Chlordiazepoxide are preferred to shorter acting ones [Lorazepam, Oxazepam] except when the liver function is seriously impaired.

Guidelines for use of Benzodiazepines in alcohol withdrawal				
Drug	Dose	Interval	Half-life	Comments
1. Diazepam	5-20 mg	6 hours	30-60 hours	Lower dose, preferably avoid in liver damage
2. Chlordiazepoxide	25-100 mg	6 hours	5-15 hours (50-100 hours because of active metabolites)	Long acting, similar precautions as for diazepam
3. Lorazepam	1-2 mg	4 hours	10-20 hours	Preferable in liver failure, elderly
4. Oxazepam	15-30 mg	4 hours	5-10 hours	Preferable in liver failure, elderly

Traditionally a fixed schedule dosing system has been popular. In this the patient is administered a pre-determined dose in divided over the day on day 1 . The dose is then gradually tapered off over seven to ten days. A rough guideline to calculate the dose required is as follows: 5 milligrams of Chlordiazepoxide OR 1 milligram of Diazepam for every standard unit drink the patient consumes. For example, if someone has been usually drinking 3 quarters [18 drinks] of whisky per day, prior to detoxification, then he would require 90 mg. of Chlordiazepoxide.

Another approach has been to load the patient with Long Acting Benzodiazepines until he is just drowsy and not give any further doses except on need basis.

Treatment Regimes for Alcohol Withdrawal	
Fixed-schedule dosing	Chlordiazepoxide (25-100 mg) or diazepam(5-20 mg) orally every 8 hours on day one, and then a 20% reduction in dose daily subsequently, taper off in 3-7 days
Front-Loading	Diazepam 10-20 mg orally every 2 hours on the first day until patient is just drowsy. PRN doses on subsequent days and at night for sleep may be required, but rarely
Delirium Tremens	Diazepam 10 mg intravenously, then 5 mg every 5 min until calm but awake. Excessive sedation and behavioural dyscontrol may be possible side effects

Delirium Tremens

Risk Factors for More Severe Alcohol Withdrawal Symptoms, Seizures, and Delirium Tremens:

- Concomitant medical or surgical illness
- Moderate-to-severe withdrawal symptoms at baseline
- Older age
- Prior delirium tremens
- Prior detoxification(s)
- Prior seizures
- Time since last drink
- Severity of alcohol dependence
- Elevated aspartate aminotransferase (SGOT)

- Greater degree of craving
 - Greater quantity and frequency of alcohol intake
 - Higher blood or breath alcohol
 - Longer duration of alcoholism > 6 years
 - More symptoms of alcohol dependence
 - Presence of alcohol-associated gastrointestinal illness
1. Make the diagnosis of delirium tremens based on history and a physical examination. A lumbar puncture may be indicated in febrile patients to rule out neurological infection.
 2. Search for indications, or other sequelae of alcohol abuse (such as gastrointestinal bleeding or pancreatitis) and treat as indicated.
 3. Sedate the patient with 5-10 mg diazepam i.v. every 5 minutes until the patient is awake but calm. Use lorazepam 1-2 mg i.v. in place of diazepam in liver-impaired patients. Reduce the dose of benzodiazepines as the patient recovers.
 4. Administer 100 mg of THIAMINE p.o. or i.v. or i.m. Give multivitamins daily.
 5. Estimate the patients fluid deficit and replace with normal saline if the serum sodium concentration is less than 120 mEq/L. If the serum sodium concentration is less than 120 mEq / L, raise the serum sodium to 125 mEq / L with 3% or 5% saline at a rate of 2 mEq / L / hr, then use normal saline.
 6. Replace potassium, magnesium, and phosphorus if the serum levels are low. Potassium can be given in the intravenous fluids at a rate of 20 mEq / hr. Give magnesium sulfate, 1 gm i.v or i.m . every 6-12 hrs for 48 hrs or give magnesium oxide. 250-500 mg p.o. q.i.d. for 48 hrs.
 7. Give 12-18 mM of potassium phosphate in the intravenous fluids every 8 hrs.
 8. Load with dilantin, 15 mg/kg, only if the patient has an untreated **non-alcohol** related seizure disorder history of previous withdrawal seizures, or multiple seizures during current admission.
 9. Consider giving beta blocker ,p.o. or i.v. if the systolic blood pressure is above 180 mmHg or the heart rate is more than 120/min.
 10. Provide frequent monitoring of the patients status by a nurse and/or a physician.

Testing and treatment for other medical problems associated with use of alcohol is necessary. This may include disorders such as alcoholic liver disease, blood clotting disorders, alcoholic neuropathy, heart disorders (such as alcoholic cardiomyopathy), chronic brain syndromes (such as Wernicke-Korsakoff syndrome).

Seizures in Alcohol Dependence

Focus initially on obtaining intravenous (IV) access for treatment if more seizures occur. A quick assessment of vital signs, airway status, and level of consciousness assures that the patient is recovering quickly or already has returned to normal.

The single most important step to diagnosing an alcohol or drug - related seizure is a thorough history. Any adult patient who has a first seizure must be asked frankly about alcohol use, as well as other drug use. History needs to be clarified from the family members and friends. The physical examination may show general debilitation, or liver disease associated with alcoholism. Neurological signs of somnolence or confusion beyond the expected post-ictal state of an uncomplicated seizure suggest a drug-toxicity or withdrawal delirium.

In a patient with seizures it is necessary to carry out basic biochemical tests for electrolytes, glucose, calcium and for liver and renal function. Blood cultures and a lumbar puncture are indicated for febrile, toxic patients. A computed

Principals of management of alcohol related seizures

- Establish whether alcohol related or independent seizure disorder
- Primary alcohol withdrawal seizures are self-limited and usually require only supportive treatment
- However, given that one third of patients with untreated alcohol withdrawal seizures go on to develop DT, treatment should be undertaken.
- Long acting Benzodiazepines (e.g. Diazepam) are the immediate treatment of choice unless contra-indicated.
- If seizures are atypical, or other etiological causes are found, consider use of anticonvulsants such as carbamazepine, valproic acid or gabapentin in the treatment and prevention.
- Advise abstinence.

tomographic (CT) scan of the brain, preferably with contrast enhancement is recommended for any patient with adult onset seizure, even when alcohol- or drug-related. In cases with an unclear cause, an EEG is required to look for epileptic discharges that may suggest underlying epilepsy.

The patient should be given thiamine as a 100 mg IV bolus [or at least 100 mg IM in case IV preparations are unavailable] to prevent Wernicke-Korsakoff's syndrome. Adequate hydration with fluid and electrolytes is also necessary.

Anticonvulsant or other specific treatment of alcohol or drug related seizures is rarely indicated. A protracted, single convulsion may require an IV bolus of benzodiazepine (diazepam 2 to 5 mg each bolus, maximum 20mg; lorazepam 2 to 4 mg each, maximum 8 mg). Three or more convulsions within 24 hours [cluster attack] should be treated with standard loading doses of phenytoin (18mg/kg in 250 to 500ml normal saline at 40 to 50 mg/min). Status epilepticus must be treated aggressively according to standard protocols.

If anticonvulsant medication is started (especially for atypical or protracted seizures) they are usually given for a minimum of 6 months, sometimes upto 2 years. However, it is very important to emphasise abstinence, as continued drinking is in itself a risk factor for seizures. The alcohol consuming patient is also likely to be poorly compliant with anticonvulsants, and the interaction between alcohol and anticonvulsants (discussed earlier) reduces the efficacy of the anticonvulsants.

The most important and health-preserving aspect of the treatment for the drug or alcohol-related seizure patient is treatment of their substance dependence.

Acute Intoxication

It is advisable to:

1. Find out whether the person's blood alcohol level has peaked - did he stop drinking a couple of hours ago? Was he drinking at a constant and steady rate? Or did he imbibe a large quantity shortly before collapsing? In the latter case it is likely that his blood alcohol level may continue to increase and he will need very close supervision.
2. Put the person to bed, lying on the side or stomach to avoid inhalation of vomit and to keep the person warm.
3. Check the person's condition frequently, at least every half hour.
4. Hospitalise without delay if the person cannot be aroused.
5. Give lots of fluids to aid rehydration as the person starts to recover. On no account should the person be allowed to consume more alcohol. It does not reduce a hangover and can be extremely dangerous.

If patient is in a Coma

The physician needs to:

1. Protect airway
2. Get a toxicological screening of blood and urine if available
3. Provide supportive care.
4. Administer Thiamine (100 mg i.v or i.m.) to prevent Wernicke's encephalopathy
5. Then administer 50 -100 ml of 25% dextrose

In a patient with behavioral problems — Belligerent or violent patient

The physician is advised to:

1. Calm the patient
2. Encourage the patient to have food
3. Ensure a quiet comfortable and non threatening environment

Giving Thiamine before dextrose

When a person is brought in altered sensorium to the emergency, the first temptation is to push in dextrose. Remember, that if the person is alcohol dependent, he is thiamine depleted. Dextrose further reduces thiamine and may push the patient into a Wernicke's Encephalopathy. Therefore, in a person in altered sensorium, draw a blood sample for emergency biochemistry, administer thiamine 100 mg iv before giving a bolus dose of dextrose

4. Take care of security of both patient and self.
5. Administer Lorazepam 1-2 mg or Haloperidol 5-10 mg p.o/ i.m./ i.v. which may be repeated if required.

Wernicke Korsakoff Syndrome (Amnestic Syndrome)

The goals of treatment are to control symptoms as much as possible and to prevent progression of the disorder. The physician is advised to:

1. Hospitalize the patient for initial control of symptoms. If the person is lethargic, unconscious, or comatose, monitoring and care appropriate to the condition may be required.
2. Monitor and protect the airway as appropriate.
3. Administer Thiamine (vitamin B-1) which may improve symptoms of confusion or delirium, difficulties with vision and eye movement, and muscle incoordination. Thiamine may be given intravenously or intra-muscularly initially. This may be changed over to an oral preparation later.
4. Prescribe total abstinence from alcohol to prevent progressive loss of brain function and damage to peripheral nerves. A well-balanced, nourishing diet should be recommended.

In Wernicke-Korsakoff Syndrome significant cognitive impairment may persist and the patient may not be amenable to counseling. The physician needs to involve the family actively to discuss measures of limiting access to alcohol (eg. limiting money with the person, spouse accompanying the person on pay day)

Alcoholic neuropathy

Treatment goals (assuming the immediate alcohol problem has been addressed) include controlling symptoms, maximizing ability to function independently, and preventing injury.

Physical therapy and/or use of orthopedic appliances such as splints may be necessary to maximize muscle function and to maintain useful positioning of the limbs. Positioning, or the use of a bed frame that keeps the covers off the legs, may reduce pain for some people.

Medication may be used if necessary to treat pain or uncomfortable sensations. Response to medication varies. The least amount of medication needed to reduce symptoms is advised, to reduce dependence and other side effects of the chronic use of medications.

Common medications used may include over-the-counter analgesics such as aspirin, ibuprofen, or acetaminophen, given orally to reduce pain. Stabbing pains may respond to tricyclic antidepressants such as amitriptyline or imipramine in low doses or anticonvulsant medications such as phenytoin or carbamazepine.

A nutritious diet should be encouraged. Nutritional supplements may be recommended.

Treatment of autonomic dysfunction (such as blood pressure problems, difficulty with urination, and bowel movement) may be necessary. Treatment may be chronic, long-term, and response to treatment is varied. Many treatments may be tried before finding one that is successful in reducing symptoms. Use of elastic stockings, sleeping with the head elevated, or medications such as fludrocortisone may reduce postural blood pressure changes (orthostatic hypotension). Manual expression of urine, intermittent catheterization, or medications such as bethanechol may be necessary to treat bladder dysfunction.

Impotence, diarrhea, constipation, or other symptoms are treated as appropriate. These symptoms may respond poorly to treatment.

Protection from injury to an extremity with reduced sensation is important. This may include change in footwear, frequent inspection of shoes to reduce injury caused by pressure or objects in the shoes, or other measures. Extremities should be guarded to prevent injury from pressure.

Use of alcohol should be stopped to reduce progression of the damage.

Alcoholic hallucinosis

Alcoholic hallucinosis is usually responsive to benzodiazepines and remits within about two weeks following abstinence. However if the symptoms persist beyond the expected period of withdrawal or the person has persistent psychotic symptoms (delusional disorder, alcohol induced psychotic disorder), treatment with low dose antipsychotics such as haloperidol, risperidone, or olanzapine may be indicated, usually for a period of six months or longer.

Alcohol related cognitive deficits

Evidence indicates that some cognitive impairment in alcoholics is reversible. “Spontaneous” recovery of cognitive function among abstinent alcoholics may be due solely to the absence of alcohol, but also may be due in part to other changes, such as better nutrition and opportunities for social interaction provided in an alcohol treatment setting.

Although the degree of cognitive impairment may not be a clinically significant predictor of post-treatment alcohol consumption, identifying cognitive impairment may have implications for successfully treating some patients. Particularly in the first weeks of abstinence during treatment, cognitive impairments may make it difficult for some alcoholics to benefit from the educational and skill development sessions that are important components of many treatment programs.

Although it may not be possible or necessary for treatment programs to administer extensive neuro-psychiatric tests to all patients, a simple test of the patient’s ability to benefit from alcoholism treatment can help determine what a patient remembers from an initial counseling session.

If there is evidence of cognitive dysfunction, patients must be allowed time to recover adequate cognitive function so that, at a minimum, information provided during treatment can be retained. However, other important elements of rehabilitation, such as improving patient nutritional status and exposure to physical exercise and resocialization activities, can be undertaken immediately. As cognitive function improves, patients can begin to participate in such treatment components as individual and group therapy, and educational programs with a better chance for understanding – and perhaps for acting on the information provided.

Long Term Outcome of Detoxification Alone

While detoxification is a necessary step in the management of chronic heavy alcohol use, detoxification alone is not effective in maintaining long term abstinence. The person’s lifestyle has been drastically altered by his long term alcohol use, the time consuming pattern of drink seeking and drink taking and the interpersonal, social and occupational consequences of alcohol dependence. Therefore, mere stoppage of alcohol use does not guarantee return to a healthy lifestyle. Added to this are the consequences of brain adaptations to his continued alcohol use and the linking up of his life to alcohol cues. The abstinent alcoholic faces numerous challenges to his abstinence and in a large proportion of cases, patients relapse within three to six months of stopping.

Relapse in alcoholism

Alcoholism, like any chronic illness tends to relapse and is often recurrent. Recovery and relapse rates in alcoholism are shown to be comparable to disorders such as hypertension and diabetes.

Causes for relapse include:

- People – There is often direct or indirect pressure from friends or acquaintances to restart use. The patient has usually lost all his friends and acquaintances as a result of his alcoholism. The only friends he has left are his drinking friends. Most abstinent alcoholics report that they are persuaded by their peers to restart. Or they might face indirect pressure when they see others use alcohol.
- Places / Occasions - Festivals where everyone is drinking, environmental cues including places and circumstances which are linked to his previous drinking (like passing the bar) where he used to go earlier may likewise trigger a relapse.
- Emotions / Moods – Both Negative emotions (the person might start to drink again to relieve anger, loneliness, sadness/tiredness, hunger and boredom) as well as Positive emotions (Celebrations, happy events) might start off drinking.
- Thoughts – People usually report two main kinds of thoughts. Craving or an uncontrollable desire to drink might strike out of the blue or may be evoked by sights, sounds, smells, places or circumstances associated with earlier drinking occasions. Self Challenging thoughts which include thoughts like *“I’m better now, I can have a drink”* or *“One drink can’t harm me....I can control myself”* can lead to breakdown of control and a lapse in abstinence.

Handling Relapse

1. Relapse should be dealt with in a non-judgemental manner and detoxification should be arranged rapidly.
2. Prevention of relapse by teaching relapse prevention skills and by encouraging sober and healthy life style.
3. Some pharmacological agents have been shown to aid long term abstinence.

Detoxification accompanied by counseling increases the chances of abstinence. The merits of brief interventions even in alcohol dependent individuals has already been discussed

For long-term care, the alcoholic can recover at a rehabilitation center or in the inpatient treatment unit of a hospital. These centers provide alcohol-free environments; continued medical care; group, individual, and family therapy; classes about alcoholism and prevention of relapse. Self help groups like Alcoholics Anonymous meetings have been shown to be of advantage to some.

Outpatient care is also available to patients and allows individuals to return to work and home while receiving therapy. These centers provide continued medical care, counseling and education about alcoholism. Individual, group and family sessions can be carried out on an outpatient basis.

Many well motivated alcoholics do not require detoxification centers or rehabilitation programs but can start treatment with a thorough physical examination by a doctor to diagnose possible alcohol-related conditions. The doctor can reassure the person about his state of health or set up a schedule of continuing care to manage chronic health problems.

Medications used to maintain abstinence

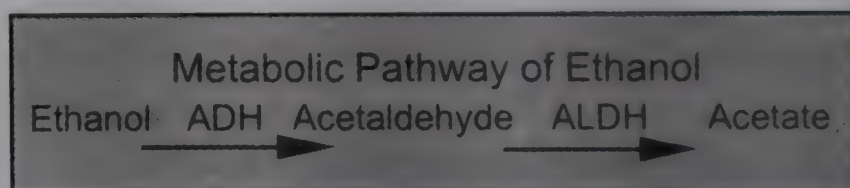
Disulfiram

Disulfiram inhibits aldehyde dehydrogenase (ALDH) irreversibly. When alcohol is consumed while on disulfiram, the blockade of ALDH by disulfiram

prevents breakdown of acetaldehyde leading to a flush reaction. Knowledge of the unpleasant side – effects of drinking while on disulfiram (Flushing, nausea, vomiting, tachycardia, hypotension) deters the patient from drinking while on disulfiram.

Supervised disulfiram therapy, especially when combined with psychosocial management aids in abstinence. Disulfiram helps the person as an additional support in his decision not to drink. It also protects the person from giving in to sudden urges to drink, or to give in to pressure from friends.

Disulfiram is supplied in tablets of 250 mg. The usual dosage ranges from 125 mg to 500 mg, however doses in the lower range of 125 – 250 mg have been as efficacious as higher doses and better tolerated. More information about Disulfiram is provided at the end of the manual.



Opioid Antagonists - Naltrexone

The narcotic antagonist Naltrexone appears to diminish alcohol's pleasurable effects and thus helps keep a "lapse" from becoming a "relapse." Naltrexone reduces alcohol consumption by:

- Decreasing positively reinforcing, pleasurable effects of alcohol
- Increasing the unpleasant effects of alcohol
- Decreasing craving for alcohol induced by initial doses of alcohol (priming)
- Decreasing craving for alcohol induced by alcohol-related cues.

Dose: 25 to 50 mg per day. It can be given once daily or even once in two days.

The effects of Naltrexone can be potentiated by the addition of serotonin re-uptake blocking drugs like Fluoxetine or serotonin antagonists such as Ondansetron

Contraindications: Naltrexone is mildly hepato-toxic and therefore contra-indicated in liver failure or acute hepatitis. Patients who need maintenance opiate medication may not be able to use it.

Relative Contraindications: pregnancy

Precaution: Monitor liver function tests

Acamprosate (Calcium Acetyl Homotaurinate)

Mode of action: it is a structural analogue of GABA and crosses the blood brain barrier. Acamprosate has been shown to have a specific dose dependent effect on reducing voluntary alcohol intake. It is popularly described as an anti-craving agent. It is currently not marketed in India

Dose: upto 2 gms per day

Serotonin Re-Uptake Inhibitors (SSRI's)

Fluoxetine, Fluvoxamine, Sertraline have been used in the treatment of alcohol dependence. While Serotonin reuptake inhibitors are effective treatment for alcohol related depression and anxiety, their role in reducing craving or change in drinking outcomes are modest. Patients with later onset of alcohol dependence [after 25 years of age] may be more responsive to these drugs. There is also some concern that the action on alcohol intake may be hindered by tolerance to the effect of the medication.

Ondansetron

Ondansetron, a serotonin receptor antagonist, used as an anti-nausea agent, may be an effective therapy — especially for patients with early-onset alcohol dependence to reduce their drinking. Ondansetron appears to work by acting on serotonin, one of the brain's many neurotransmitters. An imbalance between two chemical messengers in the brain, serotonin and dopamine, is believed to create a craving for alcohol. The drug has been shown to reduce craving significantly especially in alcoholics with young age at onset [developed dependence earlier than 25 years of age].

Recommended Dose: 4 microgram per kg. body weight twice daily.

Recognising and Coping with Relapse Triggers

An important strategy to prevent relapse after treatment is helping the patient identify relapse triggers and plan alternate ways of dealing with them. Recording such situations in a diary and actively discussing alternatives with the therapist helps patients plan ahead. Such a diary is also useful to monitor how a patient handles high risk situations at follow-up. This can be done on an individual basis or effectively in group therapy

Involve family and friends

The therapist must involve the patient's family or friends as allies in the patient's treatment. Family and friends are often aware of relapses that are concealed by the patient. Research has shown that patients that are encouraged or even coerced into treatment by family or friends are more likely to remain in treatment and have a better outcome than those who are not so pressured.

Sober And Healthy Life Style

Quitting drinking is only the first step in recovering from alcoholism. Learning to live without alcohol requires adjustment in attitudes, values, and lifestyles. If serious psychological disturbances have developed because of drinking, psychiatric counseling designed for alcohol abusers may be required. Occupational rehabilitation or vocational guidance may also be necessary.

Recovering alcoholics should avoid people, places, and objects associated with their drinking. After being sober for some time, alcoholics should make new friends and engage in new activities like returning to work, learning a new hobby, doing volunteer work, or renewing a lost association with non alcohol using friends or religious groups.

Healthy practices should be substituted for alcohol addiction: Walking, jogging, sports, or a regular schedule of exercise promotes well-being and self-esteem and provides a healthy outlet for energy. Even a walk after dinner can help to reduce the urge for alcohol.

Common symptoms during early recovery from alcohol

- * Occasional thoughts of drinking, especially during stress, peer pressure, previous cues(familiar ad, bar etc)
- * Mood swings
- * Sense of emptiness or boredom
- * Flight into health (believing that the person has been completely successful, not anticipating or planning how to handle relapse)

The recovering addict needs plenty of support from his family as well as professional help.

Learning life skills: Life skills are abilities for adaptive and positive behavior, that help individuals to deal effectively with the demands and challenges of every day life. These are helpful in all individuals in order to cope with day to day stressors and avoid the use of alcohol or other drugs as a way of coping. They are useful skills for persons recovering from alcohol related problems as an effective means of preventing relapse. Life skills include:

- Decision making
- Problem solving
- Creative thinking
- Critical thinking
- Effective communication
- Interpersonal relationship skills
- Self-awareness
- Empathy

Group Therapy

Two types of group therapies are found to be useful in alcoholism treatment: Therapist run groups and Self Help Groups.

Groups can be a very effective setting for imparting information and discussing various problems related to alcohol abuse, as well as for clarifying various misconceptions and myths surrounding alcohol use. In addition, ways of recovering from addiction, including coping skills, problem solving, identifying and handling relapse triggers, drink refusal skills, maintaining abstinence can be effectively learnt in groups. Worries and misconceptions about treatment side-effects, especially pharmacological treatments, can also be clarified in the group setting.

Self Help Groups

Alcoholics Anonymous (AA)

The AA and its 12 Steps and 12 Traditions have arisen out of the experiences of recovery of alcoholics. AA and other 12-step programs (Al-Anon for families of addicted individuals, Al-Ateen for the children) have evolved to offer a set of attitudes, beliefs, and behaviors that can facilitate change in this group of patients. AA offers as its most important characteristics an unconditional acceptance of the patient's alcoholism, an unshaken belief in the concept of alcoholism as a disease, and support to foster a healthy dependence in the alcoholic. The AA approach has been successful with many alcoholics. The meetings provide members with acceptance, understanding, forgiveness, confrontation and a means of positive identification. Admission of the problem, developing personal control over the disease, taking a personal inventory, making amends, helping others are some of the principles on which AA works. New members have 'sponsors' (recovering alcoholics) to guide them through their recovery. Many cities in India have active AA, Al-Anon and Al-Ateen groups.

Other Treatments

For persons with serious family or marital problems more intensive family therapy may be required. Similar for persons with anxiety and lack of confidence, behavior therapy to reduce anxiety and gain mastery over situations through strategies such as relaxation training, assertiveness training, self-control skills are useful.

Treatment of Psychiatric Problems (Co-morbidity)

Common psychiatric syndromes seen in people with alcohol abuse include:

- Anxiety
- Depression
- Psychotic symptoms
- Personality disorders (eg Antisocial, Borderline, Anxious -Avoidant)

Many psychiatric symptoms are the result of alcohol use, and settle following abstinence. However alcohol may be used as self treatment in some patients with underlying psychiatric disorders.

The following are useful steps in the management of such co-morbidity:

- Getting a good family and personal history
- Using a time-line approach to determine whether alcohol use and the psychiatric symptom are directly linked or independent
- Determining whether the psychiatric symptoms persisted during a long period of abstinence
- Allowing withdrawal to subside and reassess for residual psychiatric symptoms

However if there is a risk of suicide, e.g. when there is co-morbid depression or agitation, adequate precautions need to be taken and immediate treatment of the underlying problem may be required.

If there is an independent psychiatric disorder, treatment needs to be appropriately initiated (antidepressants and mood stabilizers for mood disorders, anti-psychotics for psychosis, anti-anxiety drugs for anxiety disorders) along with non-pharmacological intervention, including intervention for the alcohol problem.

Follow up Monitoring

Treatment for severe dependence is not a one time process. Follow-up treatment must be planned. Follow-up visits provide the opportunity for specific counseling around relapse prevention. Together the patient and physician should identify the triggers for relapse, remembering that psychological relapse, for example, *"I'm feeling so much better. It won't hurt to have just one drink."* precedes behavioural relapse. The patient must be seen regularly to monitor continued abstinence and adjustment. It is worthwhile involving the family and friends in the follow-up process.

Patient factors such as having a stable family, stable job, less sociopathy, less psychopathology, and a negative family history for alcoholism are more powerful predictors of positive outcome than is the type of treatment. This could be interpreted to mean that follow-up treatment is most needed for alcoholic patients with an unstable family, unstable job, more sociopathy, more psychopathology, and a positive family history of alcoholism.

Summary

- Pharmacological detoxification may be indicated in patients with moderate to severe alcohol use
- Long acting benzodiazepines are most commonly used in the treatment of withdrawal
- Physicians need to recognise and be able to treat alcohol related complications such as Delirium Tremens, Wernicke-Korsakoff's Syndrome, Seizures, Acute Intoxication, Alcoholic Neuropathy and Alcohol related Psychiatric Disorders
- Relapse in alcoholism is as common as in any other chronic medical illness
- Pharmacological agents to maintain abstinence include Disulfiram, Naltrexone, Ondansetron and Specific Serotonin Reuptake Agents (SSRIs)
- Other strategies to maintain abstinence include teaching patients to recognise and deal with relapse triggers, teaching life skills and encouraging development of alternative life styles. This can be done individually or in groups
- Aftercare and monitoring is crucial to eventual prognosis

7. Afterword

STOWELL A. T.

AFTERWORD

Although alcohol problems are manifest most publicly in the end-stage alcoholic, most of the burden of alcoholism is contributed by people who have not yet developed dependence.

This manual therefore has focused more on the detection of early problems related to alcohol misuse and the brief intervention that can be easily practiced by a busy primary care physician

Physicians who seek specialized skills in the management of end-stage alcoholism would be advised to acquire further management skills.

However we hope that this manual would provide physicians with the necessary knowledge and skills to handle early alcohol related problems. This would go a long way in preventing the progression of this debilitating illness in their clients. It would also contribute greatly to preventing the massive social and public health costs related to alcohol.

8. Appendices

THE
AMERICAN
HISTORICAL SOCIETY

Appendix 1:

Motivational Interviewing

Inadequate motivation is a crucial factor for the substance abuser's inability to change harmful behavior. Motivational interviewing strategies have great utility in interactions with substance abuse patients in primary care settings.

Motivational interviewing consists of a set of interpersonal communication techniques designed to help patients to identify and acknowledge substance abuse behaviors and to move toward changing these. It relies on a non-confrontational approach that ideally results in the patient expressing concern about his own substance use and the need to alter his intake. Motivational interviewing techniques are known to be effective in brief intervention settings. The clinician enhances the patient's motivation to change problem use of the substance.

Motivational Approaches

Eight strategies are used in motivational interviewing to motivate patients to change:

1. Giving Advice

Although confrontation, arguments about use are not advised, well-timed and rational advice can have significant motivating effect. Be clear and non-judgmental in identifying the problem. Explain why the change is important, and recommend behavior change.

2. Removing Barriers

Help the patient identify barriers he is likely to face in his attempts to change and help him creatively solve problems to overcome them. Some barriers may be practical, such as getting access to treatment. Other barriers may be more complex and require assessing the role of spouses, employers, and friends in maintaining the problem behaviors.

3. Providing Choices

Provide patients with a set of alternatives to address the problem behavior and help them to choose the strategy that is most appropriate and most likely to succeed. Having the freedom to choose their own plan provides a sense of ownership. Because the plan is not imposed, resistance to it may be minimized.

4. Decreasing Desirability

Help the patient weigh the pros and cons of the desired change [i.e. stopping or decreasing use of the substance] without overly favoring the direction of change. Acknowledge the positive incentives or personal reinforcers underlying drug or alcohol use but minimize, undermine, or counterbalance these issues. Increase and amplify the significance of the adverse consequences of his use and provide alternative reinforcers and positive incentives for alternate behaviors. Decrease the desirability of continued drug and alcohol use. For example, to decrease a patient's alcohol use, abnormal liver function test results can be shared and participation in a relaxation program encouraged.

5. Practicing Empathy

Empathy is neither an ability to identify with the experiences of the patient nor a personality style of the clinician but a learned skill of understanding the meaning of these experiences to the patient. Accurate empathy requires careful attention to what the patient says and does and skilled reflective listening. If the patient feels secure that the clinician appreciates the difficulties inherent in change, the efforts of the clinician are more likely to be accepted.

6. Providing Feedback

To sustain the change process, patients need to be kept aware of their progress. Clear and accurate feedback can be in the form of results from health assessments or objective tests of drug or alcohol use, review of substance use diaries or contracts, and even expressions of concern when the patient is struggling.

7. Clarifying Goals

Help patients plan clear goals. The goals must be realistic, attainable, and desirable to the patient. By reemphasizing the goals at each visit and modifying them as necessary, the clinician can ensure that behaviors are consistent with those needed to reach desired endpoints.

8. Active Helping

Patients need to feel that the clinician is genuinely interested in their progress. Communicate interest by taking an active role in the change process and showing a professional commitment to helping patients through its stages. If the patient feels that the clinician's efforts are sincere, the patient will feel encouraged to commit to change.

Implementing Motivational Interviewing

Establishing and maintaining an interpersonal relationship.

Speak in a low-key, matter-of-fact tone and treat the interaction as a routine part of the interview. Rapport and trust may be established by asking open-ended questions: what, if any, concerns the patient has about his substance use; what he would like to talk about; and what he likes and dislikes about his behavior. Begin the discussion with the most positive interaction possible to establish rapport, put the patient at ease, and set a positive tone for the interview. The amount of time available to meet with the patient should be specified; if time is limited, the patient should be asked to make a follow-up appointment in a week to continue the discussion. If the patient does not follow up, contact the patient, if possible and express concern, reminding the patient that you will always be available to talk and listen.

Be sensitive when questioning the patient, avoid early or premature attempts at problem solving, and be nonjudgmental and non-confrontational, but direct. The goal of the initial visit is the establishment of a relationship in which the patient feels comfortable being honest. Without a therapeutic interpersonal context, no further progress will be made.

Building motivation.

Work with the patient's ambivalence about substance abuse and purposefully reinforce the side of the patient that wants to change. If ambivalence did not exist, there would be no base from which to initiate motivational interviewing.

Two effective communication strategies to build motivation are reflective listening and encouraging self-motivational statements. The goal of reflective listening is to reinforce what the patient says, thereby encouraging continued communication. Reinforce the patient's statements by repeating key phrases in an open-ended question or reflective statement. It is especially important for self-motivational statements to be repeated to the patient. Listen and do not demand that the patient finds solutions immediately. Instead, through reflective listening, explore the meaning of the patient's statements. Statements made should be brief and used to clarify the meaning and importance of what has been said, thereby affirming and supporting the patient's perspective. The patient's statements, not the clinician's, should dominate the early interaction.

Affirmation and summarizing are two specific types of reflective statements. Affirmation can be provided by demonstrating an appreciation for the process the patient has engaged in. It acknowledges that the patient's statements have been heard and understood. With summarizing statements, briefly review what the patient has expressed. These may be linked to one another to acknowledge that the patient has expressed both positive and negative effects of substance abuse and feelings of ambivalence. The meaning of these statements should be collaborative; the patient should be allowed to correct or add to the clinician's statements.

The patient should be encouraged to make statements expressing self-motivation to help move him or her toward resolution of ambivalence. These statements focus on exploring reasons the patient provides to change behavior. For example, the clinician can elicit self-motivational statements about (1) recognition or identification of problems caused by or related to substance use; (2) concerns about how much these problems are bothering the patient and what the consequences will be if he or she does not change; (3) the patient's desire to change; and (4) optimism or hope for change in the future.

When self-motivational statements are elicited, then the clinician should ask questions or ask the patient to repeat the statements in a different way. This will strengthen, resolve, and make the desire to change more evident. Continued exploration may be affirmed by asking open-ended questions. Over time, these statements can be reviewed to allow the patient to reflect on the changes that have occurred and explore goals for the future. The goal is for the patient to identify that there may be a difference between what he or she is experiencing now and how it might differ in the future.

Supporting commitment to change.

Support attempts to change substance abuse behaviors, by maintaining a strong alliance with the patient. Continue to explore and summarize the patient's perceived problem, ambivalence, evidence of risks and problems, and intention to change. Goals set should be incremental to avoid regression and to explore options for minimizing substance use if cessation is not currently attainable. The plan must reflect available treatment resources, so the clinician should be familiar with community drug and alcohol treatment options. Inpatient treatment is typically reserved for patients with a high likelihood for suffering severe psychiatric or physical illness.

To support patients as they attempt to maintain change, clinicians can develop a formal contract that they and the patient sign describing plans for how to positively handle relapse. Patients should be encouraged to make their plans public by telling family and friends, and perhaps attending self help groups to strengthen their resolve and to obtain support.

Much of the effort in Motivational Interviewing is on working with clients' counter-motivations; that is, any motivations that lead individuals away from a decrease in substance-related problems or other problematic behaviors. Although these have traditionally been referred to as resistance, some prefer the term counter-motivation. "Resistance" is perhaps just one type of counter-motivation. In fact, there are many reasons why a person might choose to continue using substances or engaging in other problematic behaviors, including hopelessness, low self-efficacy, excitement about parts of the lifestyle surrounding the problematic behaviors, and so on. Second, the term "resistance" seems to have a pejorative quality to it, as if the individual is refusing to do "what is best" for himself or herself in an intentional, stubborn manner. Labeling counter-motivations as "resistance" may tend to promote urges on the part of the counselor to confront or argue with the client about the client's "resistance," when it may be more useful to take these other motivations as serious viewpoints or alternatives for the client to fully consider and to approach this consideration in a non-threatening manner.

Signs of client counter-motivation might include interrupting, ignoring, arguing, denying, talking about seemingly unimportant matters, daydreaming, reminiscing, "wondering aloud" and so on. If you see these behaviors in your client, consider them a cue to check your own current behaviors, plans, and expectations. Have you moved ahead to working toward the implementation of change plans without first checking the client's level of readiness? If so, you may be in a "trap," or inducing the client to argue, interrupt you, deny the problem, or ignore you. These are signs that the client is not feeling heard, respected, or taken seriously, or that the client is simply not yet ready to consider implementing what may seem to you like an obviously needed change in behavior.

When one notices counter-motivations in a client, attempt to first avoid avoid certain "traps," then help the client consider change by using certain therapeutic strategies. Below is brief coverage of some of these traps and strategies.

Traps to Avoid

Question/Answer Trap

The clinician and patient fall into a pattern of question/answer, question/answer, and so on. The problem with this pattern is that it tends to elicit passivity and closes off access to deeper levels of experience. Thus, clients are not encouraged to explore issues in depth, and the client-counselor relationship becomes increasingly hierarchical.

Confrontation/m Denial Trap

This is likely with a client who is not yet ready to change, and who provides a reasonable argument in response to every statement the chairman makes. The chairman and client then engage in an argumentative, confrontation/denial trap, in which the client counters each argument for change with an argument for remaining the same. An example of a mild confrontation/denial trap is illustrated in the following conversation:

Dr.: Have you thought about trying to lose weight so your blood pressure comes down?

Pt.: Well yes, but it's not so easy, and I must say, I really like my food.

Dr.: But it's not a matter of depriving yourself of food. You just need to eat different, healthier foods, if you see what I mean.

Pt.: Yes, I know, I did try to eat less meat and more fruit and that sort of thing, but I never keep going for too long. I always have these binges when I break all my rules, and I just get fat.

Dr.: What about....?

Pt.: Yes, but....

Rather than engaging in futile attempts to convince the client to change, encourage the client to voice the reasons for change, with just a little questioning and guidance. Remember that if a person feels backed into a corner, or one point of view, the person will usually defend that point of view more strongly. If you leave your client with no other option than to argue with you, that is what you will get.

Expert Trap

In the "expert trap," clinicians fall into providing direction to the client without first helping the client to determine his or her own goals, direction and plans. The problem with this approach is that clients may tend to passively accept the counselor's suggestions, and may only halfheartedly commit to the difficult work involved in changing. The clinician will offer suggestions for change. However, this is done after the client's motivation is high, after initial exploration of multiple pathways to change, and only upon client's request, or when the counselor perceives that the client is in immediate danger if not given advice.

Labeling Trap

Never attempt to convince a client that he or she is an "alcoholic," "addict," or some other label. As Such labels carry a certain stigma in the public mind, and it is not surprising that people with reasonable self-esteem resist them.

Premature Focus Trap

Avoid the temptation of focusing too quickly on a specific problem or aspect of a problem. Difficulties with premature focus include raising client resistance and focusing on an unimportant or secondary problem.

Blaming Trap

Clients may wish to blame others for their problems. Clinicians may feel compelled to show the client how he or she is at fault for the difficulties encountered. You are not interested in looking for who's responsible, but rather what's troubling the patient, and what he might be able to do about it..

Techniques to Try

Simple Reflection

One way to reduce resistance is simply to repeat or rephrase what the client has said. This communicates that you have heard the person, and that it is not your intention to get into an argument with the person.

Pt.: But I can't stop drinking. I mean, all of my friends drink!

Dr.: Stopping drinking seems nearly impossible because you spend so much time with others who drink.

Pt. Right, although maybe I should.

Amplified Reflection

Similar to a simple reflection, only the counselor amplifies or exaggerates the point to the point where the client may disavow or disagree with it. It is important that the counselor not overdo it, because if the client feels mocked or patronized, he or she is likely to respond with anger.

Pt.: But I can't stop using all of my friends use!

Dr.: Oh, I see. So you really couldn't stop using because then you'd be too different to fit in with your friends.

Pt.: Well, that would make me different from them, although they might not really care as long as I didn't try to get them to stop.

Double-sided Reflection

With a double-sided reflection, the counselor reflects both the current, resistant statement, and a previous, contradictory statement that the client has made.

Pt.: But I can't stop drinking. all of my friends drink!

Dr.: You can't imagine how you could not drink with your friends, and at the same time you're worried about how it's affecting you.

Pt.: Yes. I guess I have mixed feelings.

Shifting Focus

Another way to reduce resistance is simply to shift topics. It is often not motivational to address resistant or counter-motivational statements, and counseling goals are better achieved by simply not responding to the resistant statement.

Pt.: But I can't stop drinking. All of my friends drink!

Dr.: You're getting way ahead of things here. I'm not talking about your quitting drinking here, and I don't think you should get stuck on that concern right now. Let's just stay with what we're doing here - talking through the issues - and later on we can worry about what, if anything, you want to do about.

Pt.: Well I just wanted you to know.

Rolling with Resistance

Resistance can also be met by rolling with it instead of opposing it. There is a paradoxical element in this, which often will bring the client back to a balanced or opposite perspective. This strategy can be particularly useful with clients who present in a highly oppositional manner and who seem to reject every idea or suggestion.

Pt.: But I can't quit using. I mean, all of my friends use!

Dr.: And it may very well be that when we're through, you'll decide that it's worth it to keep on drinking as you have been. It may be too difficult to make a change. That will be up to you.

Pt.: Okay.

Reframing

Reframing is a strategy in which you invite clients to examine their perceptions in a new light or a reorganized form. In this way, new meaning is given to what has been said. For example, if a client reports a spouse or loved one as saying, "You really need to get in treatment and deal with these problems," the client may view this as "she's such a nag" or "she is always telling me what to do." The clinician can reframe this as "this person must care a lot about you to tell you something he (or she) feels is important to you, knowing that you will likely get angry with him (or her)."

Reframing can also be used to discuss the issue of tolerance. Clients may report that they are especially good at holding their liquor, or may view their substance use as non-problematic because they don't "even really get high anymore." This gives the doctor the opportunity to discuss notions about tolerance, and reframe it to the client as not having a built-in warning system to indicate when he or she has "had enough." Thus, what originally appears to support the concept that there is no problem ("I can hold it") now supports the concept that there may be a problem ("I'm at risk for overdoing it without knowing it until it's too late").

[Adapted from the NIAAA Project MATCH Motivational Enhancement Therapy manual (Miller, Zweben, DiClemente, & Rychtarik, 1992).]

Appendix 2:

Disulfiram

Disulfiram is a medicine used in the long term treatment of patients with alcohol misuse. It produces extremely unpleasant reactions in a person who ingests even a small amount of alcohol while taking Disulfiram. This effect is used in the treatment of patients with alcohol problems. The knowledge that taking alcohol will be unpleasant serves as a reinforcement or additional support to their decision not to drink.. It also protects them from giving in to sudden urges to drink, or pressure from friends.

Disulfiram is supplied in tablets of 250mg. The usual dosage ranges from 125 to 500mg a day. The dosage should not usually exceed 500mg a day.

Metabolism:

Disulfiram is completely absorbed from the stomach after oral administration. It is broken down in the liver and excreted in the urine. One to two weeks may be needed before disulfiram is totally eliminated from the body after the last dose has been taken. So the Disulfiram effect may last up to two weeks.

Who should not take Disulfiram ?

Generally Disulfiram is not used in

- a) Children
- b) Pregnant women
- c) Recent 'heart attack'
- d) Liver damage (cirrhosis of liver and acute hepatitis)
- e) Fits (Epileptic seizures)
- f) Psychosis
- g) Major depression
- h) Recent 'stroke'
- i) Patients unwilling to take, or those who do not know that they are being given

Side effects:

In some people, Disulfiram in the absence of alcohol can produce:

- a) Lethargy, drowsiness(45%)
- b) Decreased memory(40%)
- c) Head ache(35%)
- d) Itching(33%)
- e) Decreased sleep(27%)
- f) Dizziness(22%)
- g) Sexual problems(10%)
- h) Peripheral neuropathy-Tingling and numbness of hands and legs
- i) Worsening depression and psychosis in some patients

Less than 10 patients out of a 100 taking Disulfiram, develop serious side effects which require withdrawal of the drug.

Disulfiram - alcohol reaction:-

Disulfiram interferes with the normal break down of alcohol in the body by producing a marked increase in a normal breakdown product of alcohol called acetaldehyde.

The increase in the acetaldehyde is ten times higher than in the normally occurring metabolism of alcohol. The accumulation of acetaldehyde produce a vast array of unpleasant reactions. This is the so called Disulfiram-alcohol reaction. The reactions are characterised by

- a) Throbbing headache
- b) Facial flushing
- c) Blurring of vision
- d) Giddiness
- e) Chest pain
- f) Difficulty in breathing
- g) Nausea and vomiting
- h) Sweating
- i) Thirst
- j) Low blood pressure and shock —>which untreated may rarely lead to death

The reaction occurs almost immediately after the ingestion of just one drink.

Things to be avoided while on Disulfiram:-

Even a small amount of alcohol will bring on the unpleasant Disulfiram-alcohol reaction. The person taking Disulfiram should not use or have the alcohol containing preparation such as

- a) Cough syrups
- b) Vitamin tonics
- c) Ayurvedic tonics
- d) After shave lotion
- e) Perfumes
- f) Spirits
- g) Spirit based paints, glues, thinners etc
- h) Stale and fermented food

The Disulfiram-alcohol reaction may occur as long as one or two weeks after the last dose of Disulfiram.

Myths regarding Disulfiram-alcohol reaction:-

Some patients hear false information regarding the Disulfiram-alcohol reaction. It does not cause:

- a) Vomiting blood
- b) Passing blood in urine and stool
- c) Swelling all over the body
- d) Going mad
- e) Going blind.

The above symptoms usually will not occur in Disulfiram-alcohol reaction.

How does Disulfiram help a person?

Disulfiram helps a person

- a) to start a period of being sober
- b) to give cover over a high risk period.
- c) to resist impulses to drink
- d) to reduce drinking days
- e) to help the organs recuperate and the individual to change his life style.

(By prolonged abstinence a person can learn new coping skills and the damaged organ can return to normal state)

How long should Disulfiram to be taken?

For long term recovery and to learn new ways of coping with life, a period of abstinence needs to be at least one and probably two years. So it is appropriate to take Disulfiram tablet for at least six months and probably upto two years.

When to take Disulfiram?

It is convenient to take Disulfiram in the morning hours after coffee or breakfast. Disulfiram treatment is more effective if supervised by the wife of the patient or a close family member.

A Good outcome can be expected if:

- 1. The person is highly motivated
- 2. Daily use of Disulfiram under supervision
- 3. Abstinence prior to treatment
- 4. Regular contact with the doctor or treating team.

Treatment of Disulfiram-alcohol reaction:-

The patient should always carry identification cards describing the Disulfiram-alcohol reaction.

If any person develops Disulfiram-alcohol reaction

- 1. Stop Disulfiram
- 2. Immediately go to the near by doctor and show the card.
- 3. For further information, they can contact duty psychiatrist at NIMHANS.
- 4. If Disulfiram - Alcohol reaction is severe, the person might need admission to a hospital or nursing home so that his pulse and blood pressure can be monitored and symptomatic treatment with intravenous fluids may be given. Inj. Avil for the allergic reaction and Dopamine to elevate the blood pressure may be required according to the patients symptoms.

Appendix 3:

Methanol Poisoning: Diagnosis and Treatment

Symptoms of Methanol Poisoning: Upset stomach, dizziness, vision problems. Seizures, hematemesis

Symptoms reappear 6 to 30 hours later with greater severity.

Methanol is a clear, colorless liquid which tastes and smells much like common alcohol (ethanol) and has been used as a substitute in illegal alcoholic beverages. Commonly sold as methyl alcohol, wood alcohol or wood spirit, it is used as a solvent for lacquers, paints, varnishes and appears as an ingredient in many products like French Polish, nail-polish remover, etc.

Like common alcohol, methanol is broken down in the liver. Methanol breaks down to produce formaldehyde and formic acid, which are responsible for many of the toxic effects. The body takes several days to eliminate the methanol.

The presentation of a patient with methanol poisoning is often misdiagnosed due to the non-specificity of the symptoms. Chronic alcoholics pose particular problems since they often have the underlying conditions of central nervous system abnormalities, abdominal complaints and cardiopulmonary problems. Consequently, symptoms have led to inaccurate diagnosis of other pathologies including; gastritis, pancreatitis, diabetic ketoacidosis, stroke, subarachnoid hemorrhage, meningitis, renal colic and congestive cardiac failure.

Diagnosis of poisoning should be suspected when there is a history of exposure to country liquor or illicitly brewed liquor. Methanol tends to cause visual symptoms and abnormalities in the fundus.

Symptoms of methanol poisoning are noticeable typically 12 to 24 hours after ingestion. However, there is a broad range in this lag phase which may be as short as 30 minutes or as long as 3 days

Presentation usea, vomiting, abdominal pain, hematemesis, dizziness, headache, myalgia, weakness, seizures and coma. Its effects on the CNS resemble those of ethanol although in low doses it does not have a euphoric effect.

- Visual symptoms present with failing visual acuity, photophobia and visual blurring. Patients with visual symptoms may develop irreversible visual impairment even with aggressive intervention
- Seizures are seen in severe intoxication. CT scanning usually shows cerebral oedema or even necrosis in the basal ganglia (a Parkinsonian-like state is sometimes seen with recovery).
- Up to 2/3rds of patients have a raised amylase (haemorrhagic pancreatitis has been reported at post mortem)
- The most seriously poisoned lose consciousness and die of respiratory or heart failure. Those who do not die may stay in a coma for as long as a week and may be left blinded.
- As little as 4 ml can cause blindness and 30 to 150 ml can be fatal; about half a milliliter per kilogram of weight is deadly.

Management

- Initially treatment should focus on securing airway, breathing and cardiovascular stability. Assessment of mental status follows. Since many methanol patients are malnourished, administration of B vitamins may enhance the conversion of toxic metabolites to non-toxic compounds. Folic acid is a cofactor for the metabolism of formic acid, a toxic methanol metabolite. Supplemental glucose or thiamine therapy may be required. Thiamine is a cofactor for the conversion of lactate, which is commonly present in both methanol and ethylene glycol poisoning.
- Lavage may be considered if ingestion has occurred immediately before presentation, but is usually futile in methanol poisoning as these compounds are rapidly absorbed, within 30 to 60 minutes after ingestion. Continuous nasogastric suction may benefit methanol poisoned patients as methanol continues to be

recirculated into the stomach. Activated charcoal, however, has very low efficacy in absorbing these compounds.

- Seizures are probably best treated with phenytoin (250mg IV over 5 mins) since this will have less of a CNS depressant effect than diazepam exclude hypoglycaemia before giving any anticonvulsant.
- The specific antidote is ethanol and this should be given IV as a 10% solution in 5% dextrose. A loading dose of 0.6g/kg should be given followed by an IV infusion of 0.07g/kg/hr for non-drinkers (regular drinkers should receive 0.16g/kg/hr).
- Methanol is most effectively cleared by haemodialysis (better than peritoneal dialysis) and is reserved for those patients with renal failure or ANY visual impairment. The ethanol IV infusion rate should be doubled during hemodialysis or ethanol may be added directly to the dialysis fluid.
- (4-methylpyrazole (10-20mg/kg/d orally) has also been used as an inhibitor of alcohol dehydrogenase and has the advantage that unlike ethanol it does not cause CNS depression. It is not, however, generally available.
- Since metabolic acidosis is a result of methanol ingestion, alkalization with IV Sodium bicarbonate is often recommended and seems to reduce the symptoms of poisoning.

